THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

Telegrams—LANCET, WESTRAND LONDON *Telephones*—GERRARD 4314 & 4315 *Offices*—423, Strand, London, W.C.2

No. XXVII. OF VOL. II., 1921. **LONDON, SATURDAY, DECEMBER 31, 1921.** **Pp. 96—Price 1s.**
No. 5131. Vol. CCI. Founded 1823. Registered as a Newspaper. Published Weekly. Annual Subscription Inland £2 2s. Abroad £2 10s.

HEART DISEASE AND PREGNANCY

By SIR JAMES MACKENZIE, M.D., F.R.C.P., LL.D. (Edin. & Aberd.), F.R.S., F.R.C.P.I. Hon., Consulting Physician to His Majesty The King in Scotland; Director of the Institute for Clinical Research, St. Andrews; Consulting Physician to the Victoria Hospital, Burnley, and the London Hospital.

Demy 8vo. Cloth. Illustrated. Price 8s. 6d. net.

(See also page 4.)

Oxford Medical Publications,
The *Lancet* Building, 1 and 2, Bedford-street, London, W.C.2.

Just Published. Price 9s. net.

A GUIDE TO URINARY DISEASES

By A. ABRAHAMS, M.D., M.R.C.P., and A. CLIFFORD MORSON, F.R.C.S.

London: Edward Arnold & Co.

THE SURGERY OF THE HEART.

By Sir CHARLES A. BALLANCE, K.C.M.G., C.B., M.V.O., M.S., F.R.C.S., Consulting Surgeon to St. Thomas's Hospital, &c.

Illustrated by 48 Figures. Demy 8vo. 10s. 6d. net.

Macmillan & Co.

WISE PARENTHOOD.

By MARIE STOPES, D.Sc., Ph.D.

3s. 6d. net (postage extra).

Medical Schools generally have omitted Training on Birth Control so that many Doctors lack the knowledge to advise their Patients.

"WISE PARENTHOOD" is the text-book on the subject and the first scientific discussion of the various practical methods. It should be read by every Medical Man and Woman.

"*It should be read, as it is intended, by married people.*"—THE JOURNAL OF STATE MEDICINE.

At all Booksellers or direct from

G. P. Putnam's, 24, Bedford-street, Strand, W.C.2.

NOW READY. Pp. viii. + 381. With 28 Plates. Price 12s. 6d. net.

PULMONARY TUBERCULOSIS:

ITS ETIOLOGY AND TREATMENT.

By DAVID C. MUTHU, M.D.,
Med. Supt., Mendip Hills Sanatorium.

Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden, W.C.2.

Now Ready. Pp. xi. + 269. With 3 Charts. 5s. net.

ON ALCOHOLISM: Its Clinical Aspects and Treatment.

By FRANCIS HARE, M.D., Medical Superintendent of the NORWOOD SANATORIUM, Beckenham.

"Marked by candour, common sense, and moderation ..... likely to become the standard text-book."—BRITISH MEDICAL JOURNAL.

London: J. & A. Churchill, 7, Great Marlborough-street.

Third Edition. With many Illustrations. 12s. 6d. net.

TREATMENT OF DISEASES OF THE SKIN.

By KNOWSLEY SIBLEY, M.D. Camb.

London: Edward Arnold & Co., 41 and 43, Maddox-street, W.1.

Now Ready. Demy 8vo. Pp. xii. + 434. With 90 Illustrations and 7 Coloured Plates. Price 25s. net.

SYPHILIS AND VENEREAL DISEASES.

FOR STUDENTS AND PRACTITIONERS.

By C. F. MARSHALL, M.D., M.Sc., F.R.C.S., and E. G. FFRENCH, M.D., F.R.C.P., F.R.C.S.E., M.R.C.P. Lond., Lieut.-Col. R.A.M.C. (Ret.), late O.C. Military Hospital, Rochester Row, London.

Baillière, Tindall & Cox, 8, Henrietta-st., Covent Garden, London.

OXFORD MEDICAL PUBLICATIONS.

ORTHOPÆDIC SURGERY OF INJURIES.

Edited by Sir ROBERT JONES, K.B.E., C.B., F.R.C.S.

In two Royal 8vo. Volumes. Cloth. 1300 Pages. Fully Illustrated in colour and black and white.

Price £4 4s. net per set.

Henry Frowde and Hodder & Stoughton,
The *Lancet* Building, 1 and 2, Bedford-street, London, W.C.2.

Second Edition. Crown 8vo. Pp. xiv. + 402. Price 10s. 6d. net, postage 8d.

ADVANCED SUGGESTION: NEURO-INDUCTION.

By HAYDN BROWN, L.R.C.P., &c., Edin.,
Fellow of Royal Society of Medicine.

"It is a wonderful book."—PRACTITIONER.

Bailliere, Tindall & Cox,
8, Henrietta-street, Covent Garden, London, W.C.2.

By FREDERICK W. PRICE, M.D., F.R.S.Edin.,
Senior Physician to the Great Northern Central Hospital; Physician to the National Hospital for Diseases of the Heart, London.

DISEASES OF THE HEART.

THEIR DIAGNOSIS, PROGNOSIS, AND TREATMENT BY MODERN METHODS.

WITH A CHAPTER ON THE ELECTRO-CARDIOGRAPH.

Demy 8vo. 484 pp. With 245 Text-figures. 21s. net.

LANCET.—"By great care and by the use of an amazing amount of material, he has accomplished what many readers have been waiting for, giving us a complete account of the diagnosis, prognosis, and treatment of heart diseases by modern methods in association with all the invaluable teaching bequeathed to us by the older masters of clinical observation."

DUBLIN MED. JOUR.—"It is probably destined to take the place in the library of the present day physician that was occupied some 20 or more years ago by Sir William Broadbent's well-known work."

MIDLAND MEDICAL REVIEW.—"It is impossible to enumerate the many excellencies of this book."

Henry Frowde and Hodder & Stoughton,
The *Lancet* Building, 1 and 2, Bedford-street, London, W.C.

A NEW WORK. **BURTON-OPITZ'S PHYSIOLOGY** RECENTLY ISSUED.

"The author upholds the contention that "medicine is physiology," and the book is admirably adapted to put before the student the medical aspects of physiology, so that in the wards he may realize the fact that at every turn he is confronted by processes of normal or abnormal physiological activity. ..... An attractive feature of the volume is the skill with which the author introduces discussions on such subjects as anaphylaxis, ametropia, ventilation, fever, and parturition, that do not usually find a place in physiological textbooks. We have nothing but praise for their insertion, for they serve to bridge the chasm between theory and practice that often marks the passage of the medical student as he goes on from his preliminary studies to the hospital, and prevents his return."—BRITISH MEDICAL JOURNAL.

TEXT-BOOK OF PHYSIOLOGY. By RUSSELL BURTON-OPITZ, M.D., Ph.D., Associate Professor of Physiology, Columbia University, New York. Octavo of 1185 pages, with 644 illustrations, 63 in colours. Cloth, 37s. 6d. net.

Sent, Carriage Paid, on Receipt of Price. **SAUNDERS** PUBLISHERS 9, Henrietta Street, London, W.C.2.

NOVARSENOBENZOL, 914

SIMPLICITY. supplied in **EFFICIENCY.**

FOR INTRAMUSCULAR INJECTION

AMPSYRING

GLUCARSENOL

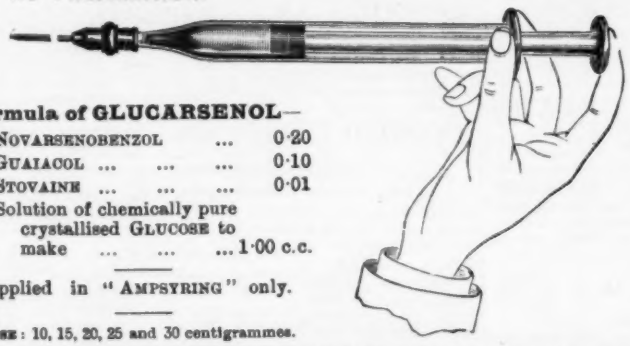
PREPARED BY ROBERT & CARRIÈRE PARIS.

(GLUCOSE SOLUTION OF NOVARSENOBENZOL IN AMPOULE-SYRINGE)

MODERN PHARMACALS, LTD 48, MORTIMER STREET, LONDON, W.1.

APPROVED BY THE MINISTRY OF HEALTH FOR USE UNDER THE PUBLIC HEALTH (VENEREAL DISEASES) REGULATIONS, 1916.

NO PREPARATION. NO CONTAMINATION.



Formula of GLUCARSENOL—

NOVARSENOBENZOL ...	0·20
GUAIACOL	0·10
STOVAINE	0·01
Solution of chemically pure crystallised GLUCOSE to make	1·00 c.c.

Supplied in "AMPSYRING" only.

DOSE: 10, 15, 20, 25 and 30 centigrammes.

The AMPSYRING is a combined AMPOULE and SYRINGE.

INJECTIONS are PAINLESS.

ABSORPTION is QUICKER and more complete than OILY SOLUTIONS.

No Danger of Embolism.

Solution does not change or deteriorate.

MODERN PHARMACALS, 48, Mortimer Street, LONDON, W.1.

Telephone: MUSEUM 564. Telegrams: "PHARMACALS, WESDO, LONDON."

Valentine's Meat-Juice

In **Hospital** and **Private Practice** during **Epidemics** and **in their own persons** when ill, **Physicians** have demonstrated the **Value** of **Valentine's Meat-Juice** in **Sustaining** and **Strengthening** the weakened **Vital Forces.**

Pneumonia *and* Influenza.

Cavalier Dr. Enrico Ballerini, *Late Surgeon to the Hospital of Rome, Italy:* "I have used VALENTINE'S MEAT-JUICE in the treatment of patients and also personally after having been ill with Influenza, and I must say it is an excellent tonic in conditions of great organic weakness. I have prescribed it with the greatest satisfaction for convalescents and invalids restricted to a liquid diet."

Edward C. Seufert, M. D., *Professor Histology and Pathology, Illinois Medical College, Chicago:* "I have always been a user of the valuable preparation, VALENTINE'S MEAT-JUICE. The best results that I have obtained from it have been in Typhoid Fever and Broncho-Pneumonia of children. I believe that the samples sent helped to save the child of one of my students at the College."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY

D 175 **RICHMOND, VIRGINIA, U. S. A.**

THE LANCET.

No. 5131. LONDON, SATURDAY, DECEMBER 31, 1921. Vol. CCI.

CONTENTS.

THE WHOLE OF THE LITERARY MATTER IN THE LANCET IS COPYRIGHT.

BRADSHAW LECTURE on Subtropical Esculents. Delivered before the Royal College of Physicians of London. By MICHAEL C. GRABHAM, M.D., F.R.C.P..... 1357

ORIGINAL ARTICLES.

The Use of Lævulose as a Test for Hepatic Inefficiency. By J. C. SPENCE, *M.C.*, M.D., M.R.C.P.; and P. C. BRETT, M.B., B.S.—(*Illustrated*)..... 1362

On the Tuberculin Treatment of Bronchial Asthma and Hay Fever. By Prof. W. STORM VAN LEEUWEN and H. VAREKAMP 1366

The Standardisation of Suspensions of Red Blood Cells for Wassermann Tests. By JOSEPH W. BIGGER, M.D., D.P.H. 1369

Serous Meningitis. By A. GURNEY YATES, M.A., M.D., M.R.C.P..... 1371

Studies in Milk. By R. STENHOUSE WILLIAMS, B.Sc., M.B., C.M., D.P.H. 1386

CLINICAL NOTES:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A Case of Partial Pyloric Stenosis (Hypertrophic): Finney's Operation. By R. P. ROWLANDS, M.S., F.R.C.S. 1373

Loss of Reflex to Light Restored in Sleep. By A. GARVIE, M.D..... 1374

MEDICAL SOCIETIES.

Norwich Medico-Chirurgical Society: Exhibition of Cases and Specimens 1375

Bristol Medico-Chirurgical Society: The Rôle of Dilute Acids in Infection 1375

NEW INVENTIONS.

A New Urethroscope Tube for the Posterior Urethra (F. Carminow Doble).—(*Illustrated*)..... 1378

REVIEWS AND NOTICES OF BOOKS.

Heart Disease and Pregnancy. By Sir James Mackenzie, M.D., F.R.C.P., LL.D., F.R.S. 1376

Vorlesungen über allgemeine Konstitutions- und Vererbungslehre, für Studierende und Aerzte. By Dr. Julius Bauer 1376

Surgery of Peripheral Nerve Injuries of Warfare. By Harry Platt, M.S., F.R.C.S..... 1376

Laboratory Manual in General Microbiology. Second edition. Edited by Ward Giltner..... 1376

Original Observations and Theories on Cardiac Disease and the Normal Heart. With a Note on Alcohol. By Michael B. Shipsey, M.B., B.Ch. 1377

Les Nouvelles Méthodes d'Examen du Cœur en Clinique. Par R. Lutembacher 1377

Fasting and Man's Correct Diet. By R. B. Pearson 1377

Materia Medica and Therapeutics. An Introduction to the Rational Treatment of Disease. Twelfth edition. By J. Mitchell Bruce, C.V.O., M.D., F.R.C.P.; and Walter J. Dilling, M.B. 1377

Taschenbuch der Ökonomischen u. Rationellen Rezeptur. By A. Fröhlich and R. Wasicky..... 1378

What to do in Cases of Poisoning. Twelfth edition. By William Murrell, M.D., F.R.C.P. Revised by P. Hamill, M.D., F.R.C.P..... 1378

SPECIAL ARTICLES.

The Medical Insurance Agency: Chairman's Interim Report..... 1385

Mental Disease in Ex-Service Men: Work of the Ministry of Pensions 1388

Vienna: Anti-Tuberculosis Work in Austria.—Prohibition of Yellow Phosphorus 1390

Canada: Public Health in Toronto.—University News 1391

The Wood-Hill Fund.... 1398

LEADING ARTICLES.

1921..... 1379

RENAL FUNCTION TESTS. 1379

THE GENERAL PRACTITIONER AND PUBLIC HEALTH 1380

ANNOTATIONS.

The Study of Deep X Ray Therapy 1381

Mauritius 1381

The Genesis of Tuberculous Disease..... 1382

The Thread of Biochemistry 1382

Parathyroid Therapy.... 1383

The Treatment of Fractures 1383

Treatment of Syphilis in the Navy 1384

Anti-Anaphylaxis 1384

Hæmatophagy 1385

Epitrochlear Adenopathy in Syphilis 1385

PUBLIC HEALTH SERVICES.

Reports of Medical Officers of Health.—School Medical Service..... 1392

CORRESPONDENCE.

Organisation of Medical Education: Ophthalmia Neonatorum (Mr. M. S. Mayou) 1393

Interposition Operation for Vaginal Prolapse (Dr. W. Blair Bell)..... 1393

Infectious Disease in Mauritius (Dr. C. L. D'Avoine) 1394

A Case of Persistent Diarrhœa 1400

OBITUARY.

John Elliott, M.D., B.S., F.R.C.P., F.R.C.S., B.Sc. 1394

Harry Littlewood, C.M.G., F.R.C.S. 1395

THE SERVICES.

Royal Naval Medical Service.—Royal Army Medical Corps.—Royal Air Force.—India and Indian Medical Service 1395

MEDICAL NEWS.

University of Cambridge: Pass-list 1396

University of London: Pass-list 1396

University of Aberdeen: Pass-list 1396

University of Manchester: Pass-list 1396

University of Leeds: Pass-list 1396

Royal College of Physicians and Royal College of Surgeons in Ireland Conjoint Examinations: Pass-list 1396

Royal College of Surgeons in Ireland: Pass-list.. 1396

Food Poisoning at Clitheroe 1386

Royal Medical Benevolent Fund 1391

Influenza Epidemic in Rossendale 1391

Donations and Bequests.. 1393

Royal Institute of Public Health..... 1395

Royal Sanitary Institute. 1396

Post-Graduate Course on Orthopædics 1396

Child-Study Society..... 1397

Harveian Society..... 1397

Medical Reciprocity with Belgium 1397

Third International Congress of the History of Medicine 1397

National Association for the Prevention of Infant Mortality 1397

Fellowship of Medicine and Post-Graduate Medical Association 1397

Memorial to a Medical Man 1397

General Hospital, Birmingham 1397

NOTES, SHORT COMMENTS, &c.

The Perils of the Week-end—and After 1399

Health in a Few Words.. 1399

Swimming-bath Sanitation 1399

Safeguarding of Industries Act: Exclusion of Santonin 1399

Flower House, Catford... 1399

Taxation for Hospital Upkeep 1399

A Valuable Medical Library..... 1400

An Improved Chloroform Bottle.—(*Illustrated*)... 1400

The Relative Value of Insulating Substances.. 1400

A Warning 1400

The Therapeutic Value of Alcohol..... 1400

Increase of Pensions since 1914..... 1400

Medical Diary..... 1397

Appointments 1398

Vacancies 1398

Births, Marriages, Deaths 1398

BALE'S MEDICAL BOOKS AND JOURNALS.

The Journal of Tropical Medicine and Hygiene,

Embodying Selections from the COLONIAL MEDICAL REPORTS.

EDITED BY SIR JAMES CANTLIE, K.B.E., M.B., F.R.C.S., AND ALDO CASTELLANI, C.M.G., M.D., IN COLLABORATION WITH W. J. R. SIMPSON, C.M.G., M.D., F.R.C.P.; C. M. WENYON, C.M.G., C.B.E., M.B.; AND T. P. BEDDOES, M.B., F.R.C.S.

Sir RONALD ROSS, K.C.B., K.C.M.G., M.D., F.R.S., Colonel A.M.S., *Honorary Adviser to the Editorial Staff.*

PUBLISHED ABOUT THE 1ST AND 15TH OF EACH MONTH. 1/6 Net. Annual Subscription, 30/- Net, post free.

Maternity and Child Welfare.

The Official Organ of the Central Council for Infant and Child Welfare. An Illustrated Monthly Journal for Workers among Mothers and Children. Now appearing on the First of each Month. 1/- Net. Annual Subscription 10/6 Net, post free.

Tubercle.

A Monthly Journal Devoted to all Aspects of Tuberculosis.

2/6 Net. Annual Subscription ... ... 25/- Net

JOHN BALE, SONS & DANIELSSON, LTD., 83-91, Great Titchfield Street, London, W.1.

JUST READY. SECOND EDITION. FULLY REVISED AND ENLARGED.

Super Roy. 8vo, 454 *pages.* *Profusely Illustrated.* **30s.** *net.* *Postage* **1s.**
Largely Re-written, entirely Re-set, and with 296 Illustrations, Plain and Coloured, most of which are new.

ON MODERN METHODS OF TREATING FRACTURES

By ERNEST W. HEY GROVES, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng.

Surgeon to the Bristol General Hospital; Consulting Surgeon to the Cossham Hospital, Kingswood; Surgical Director of the Ministry of Pensions Hospital, Bath.

"In every way the book is a very able exposition based on first-class observation, and it stands to-day as the one real modern presentment of bone surgery."—PRACTITIONER.

London: SIMPKIN & CO. Ltd. **Bristol: JOHN WRIGHT & SONS Ltd.**

JUST OUT.

The Prevention of Malaria

IN THE FEDERATED MALAY STATES.
A RECORD OF TWENTY YEARS' PROGRESS.

By MALCOLM WATSON,

M.D., C.M., D.P.H., Chief Medical Officer, Estate Hospital's Association, Klang, F.M.S.

With Contributions by P. S. HUNTER, M.A., M.B., and A. R. WELLINGTON, M.R.C.S., L.R.C.P.; and a Preface by Sir RONALD ROSS, K.C.B., K.C.M.G.

Second Edition, Revised & Enlarged. With Illustrations, 36/- Net.

LONDON: JOHN MURRAY.

ESSAYS ON THE SURGERY OF THE TEMPORAL BONE

By Sir CHARLES A. BALLANCE K.C.M.G., C.B., M.V.O., M.S., F.R.C.S.,
Consulting Surgeon to St. Thomas's Hospital, &c.
Illustrated by 125 Plates (40 in Colour) and 120 Figures.
In 2 Volumes. Medium 4to. Price 7 guineas.

MACMILLAN & CO.

Price 1s. With Illustrations.

APPLICATION OF TRUSSES

to HERNIÆ. Clinical Lecture delivered at King's College Hospital. By the late JOHN WOOD, F.R.S., Senior Surgeon to King's College Hospital. Reprinted from "Medical Examiner."
London: Matthews Brothers, 10, New Oxford-street, W.C.

THE SURGERY OF THE HEART

By Sir CHARLES A. BALLANCE,
K.C.M.G., C.B., M.V.O., M.S., F.R.C.S.,
Consulting Surgeon to St. Thomas's Hospital, &c.
Illustrated by 48 Figures. Demy 8vo. 10s. 6d. net.
Macmillan & Co.

STAMMERING

W. J. KETLEY, "Tarrangower," Brondesbury, N.W.
(30 years colleague of late B. BEASLEY, Brampton Park, Huntingdon.)
Those interested in the subject should write for his book, which will be sent post free.

STAMMERING, SPEECH DEFECTS, VOICE TRAINING.

BEHNKE METHOD. Est. 1882.
Carried on by Miss BEHNKE, 39, Earl's Court-square, S.W. 5
"Pre-eminent success in the education and treatment of stammering and other speech defects."—*The Times.*
"Thoroughly physiological principles."—*The Lancet.*
"The method is scientifically correct and perfectly effective."—*Guy's Hospital Gazette.*
From a Harley Street Specialist.—"The condition is to a great extent a psychical one, and the admirable results obtained by yourself and your parents have in my opinion been to a great extent due to your personal psychical influence over your subjects. You are at liberty to use this expression of my opinion." (*This letter may be seen.*)
"Stammering: Cleft Palate Speech: Lisping." 2s. 4d. post free.
Of Miss BEHNKE, 39, Earl's Court-square, S.W.

STAMMERING

MOST SUCCESSFULLY TREATED.
RESIDENT AND DAILY PUPILS.
PROSPECTUS AND MEDICAL OPINIONS POST FREE FROM
Mr. A. C. SCHNELLE,
Estd. 1905.] **119, Bedford Court Mansions, London, W.C.**

CLOTH CASES FOR BINDING

THE HALF-YEARLY VOLUMES OF

"THE LANCET"

Can be obtained through any Bookseller in town or country or from THE LANCET Office.

Price 3s. 6d. each, by post 3s. 10d.

Office, 423, Strand, London, W.C. 2; and 1 & 2, Bedford-street, adjoining.

BURBERRYS' 1922 SALE

STARTS JANUARY 2nd.

The trade depression will prove beneficial to those who annually visit Burberrys during the sale. STOCKS OF GOODS left on hand through the failure of the world's markets.
Prices have been lowered without considering costs.
Full list of sale, including made to measure bargains, on request.
BURBERRYS LTD., HAYMARKET, S.W.1 LONDON

(Dees) 'Aurorascope' Fundus Attachment.

Attachment in situ.

(Dees) FUNDUS "AURORASCOPE" ATTACHMENT.

(PATENT)

☞ We absolutely guarantee that a novice can see every detail of the Retina.

PRICE: "Fundus" Attachment, **£2 : 2 : 0** (postage 6d.) Fundus "Aurorascope," Complete, **£3 : 3 : 0** (postage 9d.). Model Practice Eye—with the use of which Students can easily become proficient in Ophthalmoscopy, Retinoscopy, and Sight-Testing—Price **12/6** (postage 6d.).

The "AURORASCOPE" CO., Ltd., Fulwood House, Fulwood Place, High Holborn, W.C.1
(side Chancery Lane Tube station) WHERE DEMONSTRATIONS ARE GIVEN DAILY.

Bradshaw Lecture

ON

SUBTROPICAL ESCULENTS.

Delivered before the Royal College of Physicians of London.

BY MICHAEL C. GRABHAM, M.D. ABERD., F.R.C.P. LOND.

THE purpose of this lecture is to bring before the College knowledge acquired during a long experience of the esculents, both animal and vegetable, produced where winter does not forbid—esculents which increasing communication, rapid transit, and modern methods of preservation have made available for us in their first freshness, when the short cold days of the north have restricted the profusion of our home-grown supplies.

In the limits of one brief lecture I can only hope to touch the fringe of so great a subject, although I also hope to justify a transgression beyond the limits which have hitherto confined the subject-matter of our annual Bradshaw Commemoration.

VEGETABLE FOODS.

I propose first to deal with vegetable esculents, selecting such examples as may best illustrate the growing importance of the food, vital and accessory, with which we can supplement home production.

Custard Apples, Smooth and Reticular.—The common custard apple, *Anona cherimolia*, grows abundantly in Madeira up to 1000 ft. above sea-level, and is exported to England in ever-increasing quantities. It matures in October and is available until April; the fruit is gathered when fully developed and ripens perfectly during the three days' voyage to Europe. There are many varieties; the best are scantily reticulated and bear few seeds. The typical fruit is not met with in perfection south of Madeira, though other species, such as the squamose, are common in the Cape Verde Islands. It will not bear a long journey and the specific delicacy of flavour is completely lost by cold storage. The stony, hard, black seeds of this delicious fruit survive beneath our feet in the Trafalgar-square district of the London clay, and indicate to some extent the nature of the flora of this latitude in Eocene times.

Cruciferæ.

The principal edible species of the cruciferæ abound in all the Atlantic islands, but are not exported.

Water-cress.—Among the cruciferæ *Nasturtium officinale*, the common water-cress, occurs in every mountain stream, and is largely used as an ingredient in Spanish and Portuguese soups. A spinach of water-cress into which fragments of the fungus *Boletus edulis* have been crumbled makes a dainty and agreeable nutriment. It is held in high repute as a remedy in pulmonary disorders and in the treatment of gout and rheumatism, and I have seen marked advantage derived from its use in the latter maladies. I was informed by a Scottish landowner that the cattle feeding in meadows which were traversed by a meandering stream stocked with water-cress were entirely exempt from the rheumatism and swollen joints affecting the rest of his flocks and herds, and that they retained the immunity thus acquired when they had migrated and mixed with other stocks.

The cruciferæ are pre-eminent in the natural orders for their antiscorbutic qualities; *Cochlearia officinalis* must not escape notice in this respect.

The Mango: the Genus Citrus.

Anacardiaceæ: Mangifera Indica.—The mango, though comparatively rare in the Canary and Cape Verde Islands, is very common in Madeira, fruiting abundantly when 10 years old. The oval yellow and pink-flushed fruit, stringy in substance, abounds with a rich nectarine-tasting juice not free from a resinous or carrot-like suggestion. Though distinctly smaller and less luscious than the more highly matured West Indian fruit, the Madeira mangoes carry well and find a ready sale in London during October and November. An attractive variety of the Bombay mango has recently been imported into Madeira, which is beginning to yield abundantly a somewhat larger fruit, free from fibre, but with a flavour slightly inferior to that of the wilder sorts.

The orange, *Citrus aurantium*, is found in all the Atlantic islands, varying in quality with local circumstances and environment. As it bears transport from distant regions and is not hurt by cold storage, there is here never any lack of the orange; the importance now ascribed to its juice in averting deficiency disease and its value in the diet of quite young children have enormously increased the perennial demand and consumption of this important fruit. At one time the Argentine ant, in association with several species of coccus and lecanium, completely destroyed the orange plantations in Madeira; but a means of dealing with this terrible pest has now been established, and once more both *Citrus aurantium* and *Citrus nobilis* (the tangerine) flourish unrestrained in the valleys of Madeira.

Lemon.—Citrus limonium in several varieties, common lemon, matchless in size and flavour, is found in all the Atlantic islands, but the lime is neglected.

Citron.—The Madeira citron, *Citrus medica*, has world-wide commercial importance, and is grown almost exclusively in a deep steamy valley 2000 ft. above the sea-level; it is, perhaps, the only satisfactory fruit of its kind imported into this country.

Plant Lice and Ants.

Many forms of aphis and coccus attack the Aurantiaceæ; they are mostly apterous, the males appearing for a short season; but in one species of lecanium, yearly more and more common, the female is also winged, and thus able to spread her progeny far and wide. They are all singularly dependent on the fostering care of the small Argentine ant, and are no longer formidable when this nursing is withdrawn. In a British Association paper on the life-history of this ant last year I showed that 40,500 ants in association with their fostered plant lice were engaged in draining a single lemon tree of its vitality. The female ant of the Argentine species undertakes none of the cares of motherhood, but after impregnation sheds her wings, issues forth with the workers, and in her apterous state continually founds new colonies. There seems to be an ebb and flow in the prevalence and fecundity of many species, both animal and vegetable, and the ebb phase has for some years limited the activity or propagation of the apterous *Aphis phylloxera vastatrix*, which, when first introduced, practically swept the vine-yards of Madeira out of existence, but which is now almost negligible. So, also, some of the testacea, *Helix aspersa* and *Stenogyra decollata*, for example, are sometimes swarming and at other times hardly met with. Among plants the useful *Physalis peruviana*, the so-called Cape gooseberry, has its waxing and waning periods, and other solaceous examples are similarly liable to the same oscillation of activity.

The Vine.

The vine—commercially negligible further south in the North Atlantic—is now resuming its proper place in Madeira, being cultivated from the sea-level to 2000 ft. above; the ravages both of the Oidium leaf fungus and of the root-sucking *Phylloxera vastatrix* are well under control. I have no space to describe the methods of Madeira vine cultivation; and I have only a word to say of the wine itself. Before me are two specimens, one to illustrate the keeping qualities of this specific wine and the other carrying interesting associations. The wine of the vintage of 1792 is still in perfect order and is typical of a slowly matured Madeira wine. The second specimen is a wine which, when about 10 years old, was tasted at my table by Sir Wyville Thompson and some other members of the *Challenger* Expedition of 1878. I sent a cask of the wine in that famous ship for the specific development a sea voyage is suppose to impart.

Need for Further Deep-sea Exploration.

But the name of the *Challenger* has other references in this College, and I should be neglecting an opportunity if I failed to emphasise the need of further deep-sea and similar explorations. Another *Challenger* expedition is long overdue; knowledge has increased, methods of investigation have improved, great food-supplying areas await investigation; the fruitful results of the first expedition—for instance, the national value of the Christmas Island phosphates discovery and the disclosing of the now famous fishery near Wyville Thompson Ridge in the Faroe Channel—should suffice to stimulate the Government to permit the insignificant outlay necessary for this aspect of the public welfare. It may not be generally realised that the result of the *Challenger* Expedition of 1878 has been published in 43 huge quarto volumes, composed mainly of new matter, and that the record is yet incomplete; but it is well known that the knowledge acquired merely touches the fringe of the wealth awaiting investigation, and it is impossible to watch the course of the Danish vessel recently sent forth on deep-sea investigation without a sense of disappointment at our national lethargy.

Leguminosæ.

The better sorts of bean and pea degenerate both in size and flavour and require fresh seed after a year or two; and even then there is lacking, as in many subtropical fruits and vegetables, the full flavour of our English productions in their proper seasons after winter rest. There are under cultivation in Madeira alone probably not less than 40

well-marked varieties of the common French or kidney bean, *Phaseolus vulgaris*. The climbing sorts flourish in the summer season, but the dwarf kinds produce crop after crop perennially and contribute largely to British and continental markets for green vegetable food in the winter months.

The Soya bean was unknown in these regions until, in 1910, I introduced an important variety of *Glycine hispida* from Portugal. The plants have yielded their small almost round bean copiously and can be relied upon for both as a spring and autumn crop; but the species is not fully acclimatised and has suffered from some degree of hybridisation which, in spite of the power of self-fertilisation the plant possesses, the bees of Madeira have managed to effect.

The American estimate of the exceptional position held by the Soya bean is thus stated by Osborne and Mendel: "The Soya bean is probably the only seed yet investigated which contains both the water-soluble, and in a limited quantity, the fat-soluble, unidentified dietetic essentials known as vitamins: and this fact, taken in conjunction with the high physiological value of their protein, lends an unique significance to the use of this esculent as food."

The practical application of the Soya bean in a variety of cooking is very extensive and the sustaining quality is very great, whether the bean is used alone or as an adjunct. At my own table I have used the bean either as a soup purée or as a most agreeable mush to serve with fish or meat of any kind with much satisfaction. The so-called Soya milk has too much of its own specific taste for use in tea, but is excellent and creamy in coffee, and to replace milk in pastry. As human or cattle food, fertiliser, or source of vegetable oil, the Soya bean plant is an esculent of the highest economic value, and I hope to establish it shortly in the rich and extensive lands around Lake Tsana in Abyssinia, where, 7000 ft. above the sea, in true subtropical environment and in the absence of allied species and liability to hybridisation, it will become a food resource of first-rate importance. Records show that the Soya bean was cultivated and esteemed in China 5000 years ago, but only in modern times has exact knowledge of its worth been obtained.

I cannot leave the leguminosæ without a reference to the two aspects of their estimated value met with in accessible literature. Burton, in his fascinating treatise on diet and melancholy, dismisses the entire tribe with one laconic comment, "All pulse are naught." But in the charming legend of the Jewish captives who were to be fed and fattened for presentation to the king, but were allowed 10 days' experience on pulse and water alone, the probationers in that short period appeared "fairer and . . . . fatter in flesh than all the youths which did eat of the king's meat." The pulse and water diet seems to have been continued for three years without, in those primitive times, developing any of the deficiency diseases we now dread from such restrictions. I always thought that the potent pulse of Nebuchadnezzar might have referred to *Ervum lens*—the widely distributed lentil, the favourite pulse of super-equatorial regions—but there is conflict of opinion on the matter; and my learned friend who presides over the Royal Gardens at Kew considers that the prevalent *Phaseolus radiatus*, found everywhere in the East, may with greater probability be regarded as the food of the Jewish captives.

Amygdalaceæ, Rosaceæ, and Pomaceæ.

The peach, *Amygdalus persica*, may be said to flourish too well in Madeira, for its cultivation by the propagation of good sorts and eradication of the self-sown, worthless, hard-fleshed seedlings, is thus sadly neglected. Perennially green, in all cases it is grown in the standard form, coming into flower about Christmas or earlier, and ripening from July to September. The same remarks apply both to the nectarine and apricot, several kinds of which produce enormous crops of hard, poor fruit in the absence of selection or cultivation. The almond flourishes especially well in the island La Palma of the Canaries, where whole deep valleys are devoted to it. The plum, *Prunus domestica*, and the cherry, *Cerasus avium*, provide abundant crops.

The strawberry, *Fragaria vesca*, occurs in every variety, both wild and cultivated, in Madeira, though not further south. It begins to be abundant in April and yields heavily until September, never being entirely absent.

Of the Pomaceæ, *Pyrus communis*, the common pear, is abundant, but the fruit, even of the best sorts, is inferior. *Pyrus malus*, the apple, is grown in many kinds in Madeira and the Canaries, but further south rarely seen. Quince, the common cydonia, thrives in all the islands and is preserved by the Portuguese as an excellent marmalade. *Mespilus germanica*, the common medlar, is found only in Madeira, and yields excellent fruit, which, however, is not greatly esteemed. *Eriobotrya japonica*, the loquat or Japanese medlar, a more important fruit, has become extremely common in Madeira, but not further south; its acidulous amber-coloured fruit, which is produced from February to May in great quantities, should be available as a cheap and agreeable comestible in the fruit-vacant months of the early English spring.

Among the Myrtaceæ, the guava (Psidium) is found principally in Madeira. The fruit is largely used like apples for culinary purposes and for dessert, but does not now exist in sufficient quantity for export on account of the ravages of the Argentine ant. The white fruit is far superior to the red and smaller variety. *P. littorale* and *P. cattleyana* flourish everywhere and yield an agreeable little fruit, sometimes twice a year.

Passifloraceæ.

Among all the gorgeous varieties of passion flower which adorn the Madeira gardens two only need here be mentioned. The abundant *Passiflora edulis* has purple fruit the size of a small hen's egg with orange-coloured pulp and an agreeable raspberry-like flavour; it was hardly known in the Canaries a few years ago. *Passiflora lowei* is the best of all passion fruits, being as large as a duck's egg and of an orange-yellow colour; this species was originally brought to Madeira—probably in transit—from the Canaries, but was unknown a few years ago in any of the islands beyond these. The entrancing beauty of the flower alone would entitle the plant to a conspicuous place in any garden, but the fruit is in request beyond these limits and is hence exported in increasing quantities. I have sent the seed to almost all our dependencies, and have excellent reports of its establishment and appreciated value.

Cucurbitaceæ.

The cucumber, *Cucumis sativus*, uncommon in the Canary and Cape Verde Islands, abounds in Madeira, where a stunted-looking variety grown on the hot rocks in a few inches of soil acquires an excellence of taste and quality hard to equal elsewhere. A cucumber or two, with a little salt and a loaf of bread, makes a satisfying breakfast for many a labourer. Of the gourds, *Cucurbita melanosperma* is a watery constituent of an agreeable Portuguese soup, and is supplied in bulk as a table vegetable to passing ships. This gourd is well known in the Canaries, but no further south. *Cucurbita moschata* is largely cultivated in all the islands, though attaining in no other place the excellence it possesses in Madeira, where for at least six months in the year it provides perhaps one-third of the daily nourishment of the people. The importance of this esculent in the Atlantic islands can hardly be overrated, and its value is quite comparable to the importance of the potato in Ireland; with its large supply of saccharine and farinaceous material and its facility of combination by boiling with fatty substances it makes a most nutritious food, as is shown by the surprising muscular power and endurance of the Portuguese peasantry, who so greatly depend on it. I have sent seeds of this truly desirable food far and wide.

Sechium edule chocho, the pepinella, seems to have come to Madeira about 100 years ago A full description of the species and its attributes would occupy the entire time allotted to this lecture. Besides the charm of its cultivation, its surprising growth, and the peach-like fragrance of its creamy flowers, the plant yields now a copious and unfailing supply of an esculent of the first order in food value. I have sent this wonderful vegetable to many countries—selecting the green and more tasty variety, though Sir Daniel Morris tells me that the white sorts do better in the tropics, and it is now established in many regions formerly devoid of cucurbitaceous produce. The sechium is propagated by planting the one-seeded fruit entire, the whole gourd enlarging into a persistent subperennial rhizome a foot or more in diameter and sending up annually, when well-established, 100 or more shoots to cover a trellis of enormous extent from whence hangs the small fruit in myriads. I know of no other such transmutation of the nutrient surrounding matter of a seed into the permanent tissue growth of the new plant. The pepinella is boiled as a favourite vegetable in the winter months and has an agreeable nutty flavour, together with a greater power of combining with fats than I have observed in any other gourds. It is, moreover, free from fibre and very digestible; I have employed it to great advantage boiled with cream and other fats as a non-irritant food in gastric ulceration, enteric fever, and other intestinal disorders.

Coffee.—Rubiaceæ coffea arabica, the Madeira coffee tree, once cultivated with great success with respect to the excellence of produce, was entirely destroyed before we learned how to restrain the depredations of the Argentine ant; it is now slowly re-appearing. The plant grows freely in the Western Islands, and the principal valleys of the Portuguese Cape Verde Islands are jungles or thickets of coffee growth yielding in great abundance a small berry of excellent quality. Apart from the Liberian species, with which I have not succeeded in Madeira, several new varieties of this important esculent have recently been found in the development of our Central African dependencies. One of these—*Coffea robusta*—is being distributed from Northern Nigeria and yields a fairly large berry of excellent flavour; the leader of the present Grabham Mission to Lake Tsana in Abyssinia (whence the coffee tree is believed to have first

come) reports the presence of the tree in abundance and vigorous condition 7000 ft. above sea-level in those scarcely explored regions. To those who do not habitually drink it coffee may prove an effective medicine; it is a valuable adjunct in the treatment of intermittent fevers, it relieves asthma, and it assists in overcoming the effects of alcohol or opium.

Compositæ.

The Jerusalem artichoke, *Helianthus tuberosus*, grows in Madeira with the same weedy profusion as in England and will profitably occupy waste ground with little care or cultivation. Artichokes (originally Brazilian) yield a heavy crop, and the interest just now attaching to the tubers has reference to the presence in their abundant tubercles of 12 or 14 per cent. of inulin, a substance akin to starch, but convertible by appropriate treatment into fructose—the sweetest of all sugars. I learned the nutritive and sustaining value of the artichoke in the second year of the war, when our reserves of food were exhausted and we had to devise or improvise new methods of sustaining life. I soon found out the value of the artichoke, then growing in small plots of waste land in my mountain home. Three or four of the tubercles were boiled into an imperfect purée, to which I added a handful of the succulent roots of *Oxalis purpurea* and a little salt. Meanwhile some strips of pumpkin food were boiled with three or four ounces of fat until the latter was emulsified or saponified; during the process chopped cabbage leaf, water-cress, or a few chestnuts were mixed in. When the cooking was nearly finished I crumbled into the mixture small pieces of half a dozen large boletus fungi. Three famished men were then fed sparingly on this potent food and regaled after two hours more copiously; and on the strength of this meal they worked nearly all day with well-sustained energy. During the stress of threatened starvation we discovered the unsuspected value of many a neglected esculent, and we also became conscious of the excesses of our diet in normal times. I made a point sometimes of interrupting a hungry man in his voracious consumption of a bulky meal to find, after half an hour, that appetite had been completely satisfied and that the remaining portion of his food would merely have taxed his gastric powers for purposes of elimination and rejection.

Convolvulaceæ.

Batatas edulis is cultivated in all the Atlantic islands in great profusion. The sweet potato is the foundation food of the Madeira peasantry and yields crop after crop freely with no restriction of season; but there is no storage or overplus for exportation either in Madeira or the Canaries. The tubers vary in weight from three or four ounces upwards, and their size relates in a great measure to the space allotted to the trailing or climbing growth of the stem, which, when unrestrained, will yield 25 to 30 lb. weight of potatoes. A man will do a heavy day's work on a sufficiency of plain boiled "batatas," but owing to their high percentage of starch the latter require to be supplemented occasionally with food of greater nitrogenous value. In the Azores the sweet potato is grown on a larger scale and is found capable of yielding a high percentage of alcohol; it has been estimated that tubers having 25 per cent. starch will yield 38 gallons of spirit per ton. The spirit thus extracted is largely used in the treatment of the wines of Portugal. A reliable analysis of sweet potatoes shows the main constituents as albumin 8·7, fatty oils 0·7, starch 80·3 per cent. from material dried at 212°F., and it has been found that three tons of starch possessing a high commercial value can be made from 12 tons of sweet potatoes, leaving a rich residue suitable for cattle food. It would thus be difficult in many respects to overrate the esculent value of this interesting convolvulus.

Solanaceæ.

Tomato (Lycopersicum) farming has now become an important industry, and it is difficult to cope with the growing demand of the European markets. Forty years ago the British supply was limited to the summer produce of our own gardens and tomato houses, and no general or perennial demand had developed. Several forms have long been naturalised in all the Atlantic islands and are to be found semi-wild in every district. This is especially the case with the wild tomato, *L. cerasiforme*, an excellent culinary example growing in every waste place perennially. In St. Jajo (Cape Verde Islands) whole mountain tracts are covered for miles with matted beds of this variety laden with its brilliant fruit, a potential wealth yet to be turned to account. Quite recently the Italians have succeeded in extracting from tomato seeds an oil suitable for soap-making. The Portuguese preserve the tomato for months in perfect freshness entire in brine or coarse salt; preserved in this manner it must have been at my suggestion of priceless benefit as an antiscorbutic to Nares in his long and adventurous southern expedition.

Potato.—The potato, *Solanum tuberosum*, is cultivated at all seasons both in Madeira and the Canaries at all elevations, and forms an important portion of the food of the whole population, besides yielding an overplus to northern markets as new potatoes in the early spring months. The potato, though not a perfect nutrient, is believed to yield a greater bulk of sustenance per acre than any other cultivated vegetable; no other vegetable esculent is considered so essential an accompaniment to our daily meals.

Melon Pear.—The interesting *Solanum guatamelense* was brought to Madeira 30 years ago; it became well established under the fanciful name of melon pear. It bears pallid, yellow, somewhat insipid fruit as large as that of the cyphomandra, and has become the prey of the Argentine ant, in association with the *Coccus hemisphericus* of the Azores.

Cape Gooseberry.—Physalis peruviana is found as a weed in every garden from the sea-level to 3000 ft. above. Of the abundant fruit not one-tenth is collected, though there is an unfailing demand abroad for the Cape gooseberry jam yielded by these wholesome berries.

Lauraceæ.

Alligator Pear.—Persea gratissima, the avocado or alligator pear, with its thick butyraceous substance (the midshipman's butter of other days) is an excellent fruit, creamy, rich and nutty in flavour, largely eaten also as a vegetable in many forms. The pear softens in ripening four or five days after picking, and thus arrives in perfection for sale in London during the late autumn. I have sent abundant seed of our wild indigenous *Persea indica* far and wide with the view of increasing by grafting the range of the alligator pear in climates with temperature variations greater than those of Madeira. The protein content of the fruit is 2 per cent. and the fat 15 per cent.

Cannaceæ.

The famous Madeira arrowroot is grown chiefly from *Curcuma leucorhiza* and has a high commercial value. The yield is important and the quality of first-rate excellence. There is no other starch comparable in specific gravity or nutrient value to this sort when well cleaned and prepared.

Musaceæ.

Banana.—Of the many varieties of banana the Atlantic islands mainly cultivate *Musa cavendishii* both for export and home use. This fruit is brought to all the European markets, both from Madeira and from the Canary islands, and is greatly superior in taste and quality to the larger, coarser, and more insipid fruit imported from Costa Rica and the West Indies and sold in every London street on costermongers' barrows.

A far superior fruit is yielded by another species, *M. sapientum*, much cultivated in Madeira for home use but taking quite two years to mature, and known elsewhere as the silver banana or, as Sir D. Morris tells me, the apple banana. The tree grows quite 30 ft. high and is liable to destruction by high winds; the fruit requires tender handling in packing if exported. During the war the entire crop was needed locally, and in any case there were no steamers available to convey supplies away, but normally both Madeira and the Canaries yield a heavy overplus, mainly of *M. cavendishii*, which has a well-recognised value in London. Though the banana flowers are apparently perfect and their pollen abundant no seed has been known to develop through dissemination by bees. A recent analysis gives the food value of the average banana as protein 1·3 per cent., fat 0·6 per cent., total carbohydrates 22, and the tremendous importance of the fruit in our national feeding is now fully recognised, the better sorts preserving a very exquisite flavour.

The banana has spread to the masses of our people while retaining its place on the dessert table of the rich. In my early days bananas were only known in London as a curiosity with no suspicion of their great nutrient value; and for some years later they were quite unsaleable while our English summer fruits lasted. Fifty years ago the total value of fruit of all kinds exported from Jamaica was only £720; this small sum was the commencement of a banana trade which to-day is valued at a million and a half pounds sterling and is constantly expanding as the demand grows. The substantial volumes which have been written on the banana have by no means exhausted the description of the attributes and uses of the plant apart from the food value of its fruit.

Bromeliaceæ.

Pineapple.—Ananassa sativa will grow wild in most of the Atlantic islands, but needs all the care, selection, and treatment which have brought the fruit to perfection in the western islands; there, sun-ripened with scientific precision and methods of stifling and retarding, its appearance is made to coincide with the season of greatest demand in London and elsewhere.

Liliaceæ.

Onion.—Allium cepa, the common onion, is cultivated in all the islands and exported in fabulous quantity. The size and quality obtained in Madeira can hardly be surpassed; I once had a dozen bulbs presented to me, of which one weighed 4 lb., three others more than 3 lb., and the whole

dozen 40 lb. From Madeira the onion is chiefly exported to Brazil. As an essential in our food and as a condiment, I need say nothing except to point out the delicacy of flavour in these subtropical forms, and the superiority of southern methods of serving. Long before the physiologists began to speak about vitamins the general public had shown an instinctive greediness for the onion which, though poor in caloric value, abounds in accessory food value. Before the war in 1914, imported onions, mainly from Spain, Portugal, and the Atlantic islands into this country, were valued at over one million sterling—a sound investment, providing a distinct mitigation to the people of this country of the poverty of their winter diet. Nelson, 130 years ago, had also learnt the value of the onion at Naples, and I heard in early life from the daughter of the Captain Codrington who fought under him at Trafalgar, that every ship in a blockading squadron had to be copiously supplied with this valuable antiscorbutic.

Sugar.

The sugar cane, *Saccharum officinarum*, is a general object of cultivation in all the islands, and in Madeira covers every available space with a sunny exposure from the sea-level to 1000 ft. above. The juice is devoted partly to the distillation of alcohol, but mainly to the manufacture of excellent sugar. The presence of the sugar cane in Madeira, occupying ground which could be devoted more profitably to the production of the custard apple and a variety of fruits and vegetables which Madeira only can supply in their first freshness to the London markets, is a reproach to the fiscal administration of the Government of Portugal.

Fungi.

All the well-known fungi of the British islands are well represented in the super-equatorial regions of the East Atlantic. Some are very poisonous, and these so nearly approach the edible varieties in appearance that, notwithstanding the admirable coloured charts now published, I have confined my commendation of them to two unmistakable forms—viz., our common agaricus and the *Boletus edulis* which abounds in the pine woods of Madeira in the autumn months. The boletus is a substantial esculent having a tangible protein value, and when properly prepared forms a valuable and agreeable contribution to our dietetics, though Ambroise Paré contemptuously dismisses the entire order as "an excrescence of the earth's superfluity not void of a venomous quality."

Absence of Deficiency Diseases in the East Atlantic.

It will be readily understood in the sketch I have now given of the wealth and variety of our vegetable food-supplies, perennially fresh and plentiful, that the native races in these regions do not suffer from the so-called deficiency diseases associated with the absence of vitamin substances. Open-air life and freedom from excessive changes of temperature must also contribute to this immunity. In the great war we, at Madeira, were taken by surprise; to a great extent we exhausted our local resources before we realised that normal importations of wheat and maize would completely cease. In those days we were insufficiently fed; we lost weight, and you could see among the people the vacancy of expression, apathy, and depression so well known in association with incipient starvation, and it was then that I reaped the full benefit of the botanical knowledge—built on the meagre foundation laid in the remote times of my early medical curriculum—which I have since acquired and which has enabled me as a referee in these regions to minister to the constant requirements of new provinces of the Empire.

Botanical Education.

I remember the dismay at the British Association for the Advancement of Science with which the announcement that botany would probably have to disappear from the overladen curriculum of essential requirements of medical education was received, and the strongly expressed opinions that a place should be allotted to some instruction at least in this science, however elementary. About that time Sir George Nares, whose crews had suffered terribly from scurvy in his then recent Polar expedition, and in whose ships the superior antiscorbutic value of lemon juice over lime juice had been demonstrated, called to confer with me, on his way to Patagonia, as to the material which might be available in Madeira to ferment into the sort of beer which our splendid navigator, Captain Cook, found effective in those days of miserable equipment 140 years before. Cook, doubtless under the guidance of Banks and Solander, seems to have fermented just anything, and the resulting nauseous liquid amply confirms the scathing criticism of Burton on the beer in vogue 100 years before Cook's time: "*Nil spissius illa dum bibitur, nil clarius est dum mingitur, unde constat quod multas fæces in corpore linquat.*"

Nares, with my help, concocted something at least less nauseous, and I also supplied him with a quantity of sprouting sweet potatoes which, kept moist with a fertilising fluid, gave a copious yield of green shoots and for many weeks were very serviceable; further, I gave him that information respecting tomatoes and onions, already spoken of, while we sat under the shadow of a gigantic tulip tree which Cook and Solander had planted on one of my terraces 120 years before. We spoke much that evening—probably after dinner—of the customary excesses of our diet beyond the requirements of energy and repair, and of the waste of effort exerted in eliminating at least half of the protein taken in excess of bodily needs; true physiological economy is the judicious application of scientific truth to the art of living.

ANIMAL FOODS.

The animal foods of the Atlantic islands I can pass over with the general remark that cattle of every well-known breed abound in proportion to their means of sustenance, and that we have at all seasons poultry, eggs, milk, and butter in abundance, both for local use and exportation. Several breeds of goats are met with in all our mountains; some have run wild and subsist in plenty in inaccessible places. We rely, too, on our goats' milk, which is excellent and happily free from the infection which Sir David and Lady Bruce investigated at Malta.

SEA FOODS.

I will now mention very briefly the salient points relating to the latent, almost unexplored sources of food which the surface water and abysmal depths of the seas in these regions invite us to explore. The surface plankton, or floating life, and the condition of the sea bottom with its deposits and deep-sea organisms, present general problems full of economic, biological, and geological interest. I can only hope to illustrate by a few examples the scientific importance and practical utility attaching to the study of these surface and abysmal conditions.

Tunny.—From the economic point of view the thynnus or tunny is our most important fish. Known everywhere, it is never long absent from our island markets, and scattered examples of enormous size appear throughout the year; this fish is gregarious in habit, visiting Madeira in vast numbers in the early spring, driving inshore frightened shoals of its own and other smaller species. In Atlantic regions it is captured with a stout hook baited with a living mackerel or herring, and a full-grown example 10 ft. long generally weighs about 400 lb., reaching in occasional instances the extreme weight of twice this ponderous bulk. The life-history of the tunny is imperfectly known; the rate of growth to maturity, the locality it haunts, and its means of sustenance in early life all need investigation, but its esculent value may be gathered from the fact that when eviscerated and prepared for market quite 85 per cent. of the substantial fish-meat is available for human food. A certain amount of tunny flesh is now canned and exported, but further investigation and improved methods of fishing will presently show what huge reserves of this valuable food at present escape us. The tiny scales entirely surrounding the body give the skin a smooth appearance, and excellent leather is now being manufactured from this and other sea monsters.

The flesh of the tunny fish, like that of many other Scombridæ, seems to carry with it a liability to a mild and evanescent form of urticaria. I was once present at a dinner where 7 out of 12 guests were victims of some noxious substance thus conveyed in eating. The chef had served up an appetising course of "veal" cutlets made of the pallid portion of tunny with a taste suggestive of anything but fish, and two hours later the recipients were comparing notes of their symptoms and highly-coloured countenances. I advised the hostess on future occasions to have her "veal" served up with fennel sauce, which by some beneficent instinct people have learned to eat with mackerel and the like, thereby gaining immunity from nettle-rash. Funchal,

the chief town of Madeira, is named from the prevalence in the neighbourhood of this potent herb.

Many other species of Scombridæ also abound in East Atlantic waters. Among them is *Lepidopus caudatus*, now classed among the Trichiuridæ—a truly subtropical fish of wide distribution—known occasionally even as far north as our own southern coasts, and here called the scabbard-fish. In New Zealand it is known and esteemed as the frost-fish. The lepidopus has a band-like body, black, without scales; taken at Madeira at all seasons, it is with the tunny the mainstay of our market supplies. It grows to a length of about 6 ft. and rarely exceeds 7 or 8 lb. in weight. Though found at all depths, the lepidopus in the slender structure of its bones and other respects must be considered a deep-sea fish; its rapacious character is indicated by its formidable dentition. The flesh of no other fish is so serviceable for the table as regards variety of cooking.

Sherny.—I select the *Polyprion cernium* as typical of the highly important food-yielding order of Serranidæ. This species is known as the wreck fish, from its habit of accompanying floating wood, attracted thus by the small marine food species generally associated with such objects. Known as the shern or sherny, the fish has a great geographical range, and without following it into the Pacific we find it throughout the Atlantic Ocean, and even also in the Mediterranean at the present day, though there is no trace of the species in that sea in the writings of the ancient Greek and Roman naturalists. It abounds in subtropical waters and in Madeira, where it seems to occupy the place of the familiar Mediterranean *Sciæna aguila*, it is one of the commonest and best known fishes in the market, esteemed for its white flesh and substantial nutriment, though lacking any particular excellence of flavour. Possessing a high degree of muscular irritability, this fish is better for being kept quite 24 hours before boiling. The pulsation of the sherny's heart is maintained for some hours after every other sign of life has ceased—quite six hours, in my experience, when the organ has been laid open to view—and the fishermen affirm that cardiac movements sometimes continue for two days, though you cannot revive them when once they have ceased. Some of the sharks show the same apparent survival of cardiac life or motion, for I have held in my hand the beating heart of *Zygæna malleus* for some minutes after the organ had been severed from a recently captured fish. The sherny of these latitudes is only captured by the hook, and though shoals of small fishes weighing from 5 to 20 lb. are often to be taken near the surface, the proper home of the full-grown adult is in the deep open abyss where, weighing from 30 to 100 lb. or more, it is taken at the enormous depth of 2000 to 2500 ft. or even deeper. Coming up from a depth so stupendous the fish becomes so distended with gas, expanding upon the removal of the vast pressure below, that it rises to the surface, not indeed dead, but wholly powerless, in a sort of rigid cataleptic spasm. The stomach is usually inverted and protruded into or through the mouth, and its eyes forced far out of their sockets. Its life-history, rate of growth, food, and the circumstances which determine its descent from the warm surface water into the cold depths, and the means necessary for securing and utilising this great source of valuable food, are problems awaiting solution. In general character and appearance the sherny is a plain, dull-coloured unshapely fish, with a capacious gape and enormous head, showing a clear generic affinity to Serranus, but its fascinating anatomical details are beside the province of this lecture.

Market Varieties.

Distinguished ichthyologists have wondered at the variety, abundance, and colouring of the southern fish markets. There are no flat fish, and the common members of the cod-fish tribe, which so largely fill our stalls in England, are usually represented only by one subordinate species of the tribe, the Mediterranean phycis. Many of the most useful of the fish esculents are present throughout the year, though more abundant in spring and early summer; among them two species of Clupea, the *Caranx trachurus*, the familiar Zeus or John Dory, and the appreciated red mullet; but the seasons are marked by the prevalence and predominance of successive forms, which month by month vary the perennial supply. The red mullet is taken abundantly at all seasons in shallow water, in traps made of cane or wicker-work without any bait, into which the fish aimlessly wander. I once tried to augment their capture by suspending a few luminously painted shells in the traps to entice them, but these experiments were entirely vitiated by the intrusion of unwelcome visitors—octopus and conger—which, attracted by the unusual phosphorescent glow, entered and devoured the rightful occupants of my cages.

An Unexplored Food Reserve.

The impression left after contemplating our fish markets and noting the patient and primitive methods employed in capture is that we have in these southern waters a reserve and wealth of food which, in the progress of investigation, will eventually be made to minister to the needs of many regions now beyond the narrow limits of its application. And when we remember the great depth of the oceans and that plants may live and function three or four thousand feet below the surface, and moreover that animals are found at every depth, we may truly conclude that the total quantity of living matter in the sea greatly exceeds that on the land surface of the earth. The whole subject of these super-equatorial marine food resources abounds with both economic and biological interest. The surface plankton has yet to be explored; we have in these abundant surface foods a key to the welfare and maintenance of life in the depths; and it is not unusual to meet in their early stages crustacean and other species which, bred and born on the surface, disappear and are not afterwards known in their maturity in these waters. The globigerinous ooze on the surface below also bears evidence of the perpetual rain of food descending from above. Much of this surface organic matter is, doubtless, intercepted and consumed in its fall, but far more either reaches the bottom or is actually dissolved in the sea water and becomes thus a tangible source of deep-sea food. Nevertheless, the fat robust condition in which our large deep-sea fish arrive at the surface when captured, and the numbers in which we know them to abound, suggest the nutriment available in these abysses.

With the desire of knowing something more of deep-sea life and nutriment I have recently been sinking some large, closely woven wicker-work traps a couple of miles out at sea S.E. of Madeira in water about 1000 ft. deep. The traps are let down with stout cords buoyed all the way down at intervals with large cork floats which ease the labour of hauling in. Barnacles and other creatures soon attach themselves to the cork floats, and thus show that life is not absent in any stage of this sea depth. The traps are baited with some highly pungent decomposing animal matter, and are drawn up every 6 or 12 hours for examination. If the trap has rested on the smooth Atlantic globigerinous ooze, where—as they would be exposed to the vigilant monsters in search of food—the smaller creatures do not venture, the take is negligible; whereas, if the bottom is rocky or near some stony ledge, there seems to be an unfailing supply of well-nourished and tempting prawns (*Pandalus*) and Amphionidæ. The prawns, like some of the larger deep-sea fish I have been describing, do not survive their transference to the surface, but arrive dazed or dead. Some of them escape from the traps in the process of hauling in, but float to the surface dazed and helpless with the destructive expansion already noticed.

The Sea Bottom.

The condition of the sea bottom is not less mysterious than the life-history and food of its occupants, and occasionally we know it to be subject to change and disruptive commotion. It was my good fortune to observe the occurrence of one such commotion. I was observing at that time the strength and variations of the electrical so-called earth-currents which affect our deep-sea cables, and which, sometimes weak and sometimes active, are never entirely absent. My hope was to establish a definite relation between these submarine indications and the earth tremors registered by seismographic observation, and thus render it possible not merely to record but to predict an earthquake or a threat of earthquake in a given locality. On this occasion an earthquake of moderate intensity actually happened, shaking down great masses of rock and generating a surface wave of sea water of considerable magnitude. But the cable currents were present in great excitement quite three days before any sign of coming commotion could have effected an instrument of vibration. The cable under observation happened to lie in the path of commotion and was destroyed by the submarine disruption. It was the accident of the earthquake locality coinciding with the path of the

cable which revealed the occurrence of a volcanic outbreak in this oceanic depth, and showed what may often happen on the ocean floor with little or no evidence at the surface. The cable itself beneath was destroyed for several miles, and the extent of the disturbance was only revealed when, in laying the cable afresh, it was found necessary to travel 15 miles away before a smooth bed could be found beyond the jagged rocks into which the placid ocean bed had been torn.

CONCLUSION.

I confess to a sense of disappointment in view of the status and repute of this College, and of the pride every Fellow feels in our traditions and equipment, that the coöperation sought by the Government of this country during the recent war as to food, dietetics, hygiene, and cognate matters was not required of us in corporate capacity. The work I am indicating was truly accomplished in association with us; neither could the Royal Society have furnished the advice and information needed by the Government and nation in such matters without the able and disinterested coöperation of our distinguished colleagues. We are largely engaged in meeting the provision of our country's need of competent medical practitioners. We are an examining and licensing body truly, but much more. We are the custodians and exponents of science far beyond the narrow definition of medicine itself, and it will be found that in any committee appointed to report on a matter of collateral science—and what science is not collateral to ours?—the effective output has been largely and perhaps mainly due to some guiding influence issuing from within these walls.

THE USE OF LÆVULOSE AS A TEST FOR HEPATIC INEFFICIENCY.*

BY J. C. SPENCE, *M.C.*, M.D. DURH., M.R.C.P. LOND.,
JOHN AND TEMPLE RESEARCH FELLOW;
AND
P. C. BRETT, M.B., B.S. LOND.
(*From the Medical Unit St. Thomas's Hospital.*)

LÆVULOSE as a test for liver function has been extensively used in the past by Strauss and various others, but for reasons which will be fully described later the results obtained were unreliable. All the observers based their conclusions on the absence or presence of glycosuria after the patient had received a large dose of lævulose by the mouth. Recent observations on the increase in blood-sugar concentration, brought about by the ingestion of carbohydrate, point to the conclusion that the degree of hyperglycæmia produced is more important than the presence or absence of glycosuria in indicating liver inefficiency. Hopkins,[1] Hammam,[2] Maclean and de Wesselow[3] and others have shown that if 50 g. of glucose be given to a normal adult individual after he has fasted for three or four hours an immediate rise in the sugar content of the blood can be demonstrated. If blood-sugar estimations be made immediately before and at half hourly intervals after the ingestion of the glucose, it will be found that this rise is from an original basal level near 0·100 per cent. to about 0·170 to 0·180 per cent. at the end of the first half hour. At this point a rapid subsidence takes place, and the sugar content of the blood falls to or below the original level within an hour or an hour and a half. When plotted graphically the result represents the normal "blood-sugar curve" for 50 g. of glucose. Alterations in sugar tolerance will affect the shape of this blood-sugar curve. In conditions of decreased sugar tolerance the rise is abnormally high and prolonged. If the blood-sugar has not returned to its original level within one and a half or two hours, a diminution in the sugar tolerance is considered to be present. All the available evidence suggests that the nature of this curve is chiefly dependent on the power of the liver to store sugar in the form of glycogen. Maclean and de Wesselow[3] pointed out that the only sugar in ordinary use which did not produce a rise in blood-sugar concentration was lævulose. They showed that in the normal healthy adult 50 g. of lævulose could be taken without producing any appreciable increase in the blood-sugar; this observation they made use of in testing for liver efficiency in various cases, on the supposition that a defective liver mechanism would result in the production of lævulose hyperglycæmia.

That lævulose in the amounts used by Maclean and de Wesselow produces no definite increase of blood-sugar we have confirmed. In some cases a very slight rise of from 5 to 10 mgm. per 100 c.cm. was observed, a rise almost within the bounds of experimental error. The normal blood-sugar curve after 50 g. of lævulose can thus be represented by a continuous straight line from the original blood-sugar level, or a line showing slight oscillatory deviations of 5 to 10 mgm. per 100 c.cm. from the original level. A definite rise in the blood-sugar of even 20 mgm. per 100 c.cm. after 50 g. lævulose indicates a diminution of sugar tolerance.

Liver Function and Lævulose and Glucose.

The only explanation of the difference in the blood-sugar curves following the ingestion of these two sugars that can be put forward in the present state of our knowledge is, that in the case of lævulose, the sugar, after absorption from the alimentary tract, is so readily taken up by the liver and stored as glycogen that it does not appear in the systemic circulation. If the functional capacity of the liver be diminished in any way—e.g., in the degeneration of hepatic parenchyma seen in salvarsan poisoning—it will not be able to deal with the 50 g. of lævulose presented to it. The lævulose will then pass to the systemic circulation, where a rise in the blood-sugar content will result. The greater the degree of liver damage the more lævulose will pass through, and the greater will be the rise in the blood-sugar curve.

Glucose is not assimilated and stored as rapidly as lævulose. Even in the healthy individual it passes readily through the liver to circulate for half an hour or more in the systemic circulation, producing there, as we have seen, a definite rise in the blood-sugar. It appears to be abstracted from the blood stream by the intervention of a carbohydrate storage mechanism, which does not, however, come into play effectively until half an hour or more after the ingestion of the sugar. In the presence of an inefficient liver this abstraction and storage of the glucose is delayed. A high and prolonged blood-sugar curve results. But the variation from the normal is not so marked as it is in the case of the altered lævulose curve of liver inefficiency.

A Theory Tracing Rise of Blood-Sugar to Absorption of Salts.

We are aware that Cammidge, Forsyth and Howard[4] have recently advanced a theory which opposes this explanation. They argue that the rise of the blood-sugar following the ingestion of food results from changes in the reaction of the blood produced by absorption of salts formed from the digestive secretions; and that the rise results from the breaking down of preformed glycogen—an increased glycogenolysis—in the liver. Their theory explains this increase in glycogenolysis as being caused by the active stimulation of the diastatic ferment of the liver, which in its turn is brought about by three factors: an actual change in the hydrogen-ion concentration of the blood, an increased permeability of the liver cells to sodium chloride, and a release of the inhibitory action of the pancreas. Their argument is based, however, on experimental work in which certain results were quite different from the results which we, and many other workers, have reached in covering the same ground;

* The expenses of this investigation have been borne by the Medical Research Council.

nor can we agree with certain premises used in their explanation. Cammidge and his collaborators found: (1) That the effect of a purely protein meal in raising the blood-sugar was little if any less than that of carbohydrate foods; (2) that, in the normal person, a fall in the blood-sugar level occurs during the first half hour after a mixed meal, this fall coinciding with the "alkaline tide" in the urine and the passage of sodium-ions from the stomach into the circulation; (3) that the normal blood-sugar curve after a mixed meal containing carbohydrate included this preliminary fall in the first half hour, then a rise, reaching its maximum in three hours after the meal, followed by a gradual fall until the blood-sugar reached its original level at the fifth or sixth hour. In contrast with these, our results in similar experiments, while confirming those of Jacobsen,[5] Maclean and de Wesselow,[3] Frank and Melhorn,[6] and others, show: (1) That for at least five hours after the ingestion of protein there is no appreciable rise in the blood-sugar; (2) that in a normal person the effect of a mixed meal containing carbohydrate is to produce an immediate rise in the blood-sugar without any preliminary fall; (3) that, after such a meal, this rise is greatest during the first half hour or so and reaches its maximum within 60 minutes, subsiding quickly to regain its original level within two hours. Moreover, their explanation of the factors which promote glycogenolysis through activation of the diastatic ferment of the liver does not take into account that the liver is not richer in diastase than the muscles, lungs, kidneys, and other organs; that it is extremely improbable that the absorption of acid is so great as to overcome the regulating mechanism in the blood, and so produce an actual increase in H-ion concentration; and that, given the presence of a certain minimum of salts for diastatic action, a mere excess of sodium chloride in the liver cells will not increase that action in proportion to the excess. Prior to Cammidge, Forsyth, and Howard, similar ideas were expressed by Langfeldt.[4]

Experiment on Rôle of Acid Secretion in Rise of Blood-Sugar.

The following experiment which we carried out affords more practical evidence that the acid secretions during digestive activity in the stomach play no part in influencing the rise in blood-sugar following the ingestion of food. To a healthy adult 50 g. of glucose dissolved in water were given by the mouth. The blood-sugar rise was determined by estimations of blood taken at intervals of 20, 30, 40, 60, and 100 minutes after. A week later, under similar conditions, an Einhorn's tube was passed into the jejunum (position confirmed by X ray), 50 g. of glucose were then passed into the jejunum and the blood-sugar rise determined at similar intervals. The results were as follow:—

(1) 50 g. glucose absorbed by stomach; (2) by jejunum.

	(1)	(2)
	Blood-sugar per cent.	
20 minutes	0·154	0·136
30 ,, ...	0·153	0·167
40 ,, ...	0·161	0·161
60 ,, ...	0·132	0·117
100 ,, ...	0·102	0·102

These results show the close similarity of the blood-sugar rise which occurs whether the material is first taken into the stomach or passed directly into the small intestine. In the latter case it is difficult to conceive that the result could be influenced in any way by the production of acid in the stomach. Moreover, experiment shows that strongly acid or alkaline solutions of sugar taken by mouth produce the same change in blood-sugar concentration.

Details of Method for Determining Liver Efficiency.

The patient must fast for at least three hours before the test is carried out. In the normal person the influence of the preceding meal on the blood-sugar will have passed off. It is perhaps better in many cases to make the interval longer than three hours, and in hospital practice our routine is to instruct the patient to eat a very light breakfast and then attend at the laboratory four or five hours later. The first sample of blood for sugar estimation is taken immediately before the patient drinks the lævulose, further samples being taken at half-hourly intervals for two hours. With a suitable method, estimations of the blood-sugar in these samples can be carried out in the intervals between the taking of the blood. The lævulose is given dissolved in 100 to 200 c.cm. of water. The amount varies with the size and weight of the patient. The following are convenient amounts:—

For a person of { 80 kilos .. .. 50 g. / 60 ,, ... 40 ,, / 40 ,, ... 30 ,, } lævulose.

In normal persons these amounts of lævulose will cause no appreciable rise in blood-sugar. But for the purpose of the test they should not be exceeded. In many normal individuals whose blood-sugars show no rise after 50 g. lævulose, a definite rise can be provoked with 100 g., which appears to be beyond the immediate capacity of even a healthy liver. It is for this reason that restriction of the amounts must be made.

For clinical purposes a micro-chemical method of blood-sugar estimation is necessary. Venous puncture is thereby obviated. We have used Maclean's[7] method throughout. In this, capillary blood is taken from a needle prick into a 0·20 c.cm. pipette, with little or no discomfort to the patient. In a series of cases we carried out urinary examinations to determine the degree of glycosuria which resulted. Urine was collected at the same half-hourly intervals at which the blood was taken. For qualitative purposes Fehling's test and Seliwanoff's resorcin test for lævulose were used. Quantitative estimation of urinary sugar was carried out by means of Bertrand's method and the Safranin method.

The Response in the Normal Individual.

In Table I. the result of the test in five apparently healthy cases is given (one, D. J., was a laboratory assistant, the others out-patients of the hospital class). It will be seen how slight an effect doses of 30 to 50 g. of lævulose have on the blood-sugar. In no case was there a definite rise of even 0·02 per cent. The greatest rise was only 12 mg. per 100 c.cm., and this was in the case (M. R.) of a pale anæmic woman in whom syphilis had been suspected and who, therefore, might justifiably have been excluded from the series. We have taken the mean of these curves and plotted them graphically in Fig. 1. This will be taken as the normal expression of the liver function test in the healthy individual, and used as a basis of comparison for the results found in the other cases we have investigated. In one of these cases (H. W.) a comparison of the lævulose and glucose blood-sugar curves was made; 30 g. of glucose were given by the mouth; the initial blood-sugar level was 0·086 per cent., and at half-hourly intervals after the glucose the successive levels were 0·168 per cent., 0·109 per cent., 0·092 per cent. A rise of 82 mg. per 100 c.cm. which, it will be remembered, is a normal result with glucose.

TABLE I.—*Results of Liver Efficiency Test in the Normal Individual.*

—	Age.	Weight in kilogrammes	Amount of lævulose given in grammes	Blood-sugar per cent. Before taking lævulose.	½ hour after.	1 hour after.	1½ hours after.
D. J. ..	24	70	50	0·090	0·089	0·099	0·090
H. W. ..	33	64	30	0·082	0·091	0·084	0·083
M. R. ..	26	55	30	0·086	0·098	0·095	0·091
F. F. ..	37	—	50	0·102	0·104	0·101	0·100
W. R.	55	—	50	0·102	0·102	0·112	0·109

We have stated that even in the normal individual a definite rise in blood-sugar will follow the ingestion of lævulose if a large enough amount be taken. In cases we have investigated, 100 g. of lævulose have provoked such a rise, when 50 g. had no effect on the blood-sugar. A typical example gave the following

result: before the 100 g. of lævulose 0·089 per cent., half an hour after = 0·117 per cent., one hour after = 0·153 per cent., one and a half hours after = 0·118 per cent.

The Result of the Test in Toxic Salvarsan Jaundice.

The condition of toxic jaundice which occurs not infrequently, after the administration of salvarsan, has provided clinical material for the application of the test. Turnbull's* very careful histological examinations in fatal cases showed how the liver in particular is affected in this condition. In all cases he found the liver lesion to be more severe than that in any other organ. This is an important point to establish, for thereby we can exclude the possibility of the results we have obtained in the following curves being due to pathological changes in the intestine, pancreas, endocrine glands, and other organs.

We have had an opportunity of applying the test to cases of toxic salvarsan jaundice of varying degrees of intensity. One of these was ultimately fatal, and post-mortem confirmation of the liver damage was obtained. A few were extremely severe with slow recovery; others were moderately or very slightly affected. In every subject the test revealed an impairment of the functional capacity of the liver; but, as might be expected, the most striking result was in the fatal case. In this patient the symptoms and clinical signs were not more marked than in other moderately affected cases who recovered quickly, but the test showed that there was a higher degree of liver damage than was indicated by the clinical picture. The result of the test was confirmed by the subsequent course of events, for the man died a few days later.

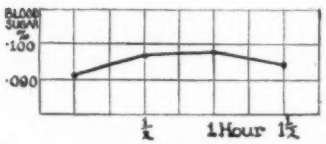


FIG. 1.—Normal blood-sugar curve after 30 to 50 g. of lævulose (see Table I.). This result denotes normal liver efficiency.

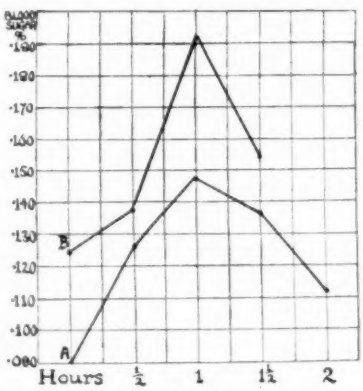


FIG. 2.—Results of lævulose tests in two cases of salvarsan jaundice, showing (A) moderate degree and (B) severe degree of liver inefficiency.

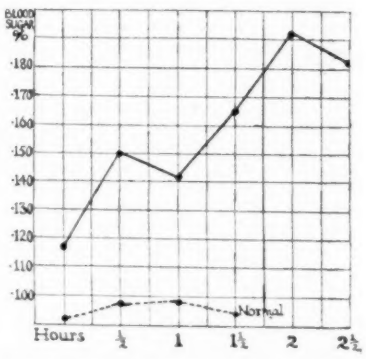


FIG. 3.—Result of lævulose test in a fatal case of salvarsan jaundice with extreme degree of liver inefficiency (see text). Note the high and prolonged rise in blood-sugar compared with the result in a normal individual.

A. The following is an example of a *moderate* degree of liver inefficiency as revealed by the test.

W. C., aged 23, a moderately severe case of toxic salvarsan jaundice with symptoms of anorexia, vomiting, and jaundice appearing after two courses of ten N.A.B. injections and five silver-salvarsan injections. The liver-function test was carried out after the jaundice had existed for four weeks. There was no vomiting at this time, the patient feeling fairly well, but a deep tinge of jaundice persisted. 50 g. of lævulose were given. The levels of the blood-sugar curve (Fig. 2) were:—

		Blood-sugar per cent.
(1) Before	50 g. lævulose	0·090
(2) ½ hour after		0·126
(3) 1 „ „		0·148
(4) 1½ hours „		0·137
(5) 2 „ „		0·112

This shows a very definite rise of 50 mg. per 100 c.cm., reaching its maximum in one hour after the ingestion of the lævulose, and remaining at an abnormally high level for at least two hours.

B. The following is an example of a *severe* degree of liver inefficiency as revealed by the test. In this case the blood-sugar curve is higher and tends to be more prolonged than in the former case.

J. E., aged 46, a severe case of intense jaundice which followed one N.A.B. injection; asthenia and anorexia very marked. On 22/7/21 50 g. lævulose gave the following result (see Fig. 2).

		Blood-sugar per cent.
(1) Before	50 g. lævulose	0·125
(2) ½ hour after		0·137
(3) 1 „ „		0·192
(4) 1½ hours „		0·154

After four weeks the patient was discharged from hospital, greatly improved. Seen again on 13/9/21 all signs of jaundice had disappeared, the patient was quite well, and had been free from all symptoms for three weeks. The liver-function test was repeated with the following result:—

		Blood-sugar per cent.
(1) Before	50 g. lævulose	0·101
(2) ½ hour after		0·102
(3) 1 „ „		0·110
(4) 1½ hours „		0·106
(5) 2 „ „		0·100

It is interesting to compare these two results, the first denoting a marked degree of liver inefficiency; the second a normal reaction to the test, denoting a restoration of the liver function.

C. The following is an example of an *extreme* degree of liver inefficiency as revealed by the test.

C. L., aged 57. Treated with two courses of silver salvarsan; jaundice appeared ten days after the last injection. Seen on 5/9/21 two weeks after the appearance of symptoms, the patient showed a definite degree of jaundice, with asthenia and anorexia. The symptoms were not so marked as to suggest anything more than moderately severe affection of the liver with a correspondingly good prognosis. On 9/9/21 there was no change in the patient's condition. The liver-function test, using 50 g. lævulose, gave the following result (see Fig. 3):—

		Blood sugar per cent.
(1) Before	50 g. lævulose	0·117
(2) ½ hour after		0·150
(3) 1 „ „		0·141
(4) 1½ hours „		0·164
(5) 2 „ „		0·192
(6) 2½ „ „		0·184

Two days later the patient became extremely ill, and died on 12/9/21. A post-mortem examination was carried out 14 hours after death by Dr. J. F. Taylor, to whom we are indebted for the following report: "The liver shows marked perihepatitis and some diffuse cirrhosis with numerous 'new bile-ducts.' There is general congestion with extensive areas of extreme toxic necrosis with polynuclear infiltration. Free bile-pigment present. Much granular fatty degeneration and crystals of free fatty acid."

As indicated by the figures just given, the result of the test carried out three days before death showed an extreme incapacity on the part of the liver to deal with the lævulose presented to it. The high continued rise, reaching its maximum two hours after the lævulose, and continuing for some time afterwards, presents a more intense picture than we have encountered in any other case.

D. In Table II. results of the test in slight cases of salvarsan jaundice are given. In these patients the test was applied in the stage of recovery, when jaundice was the only remaining symptom. In each case there was a definite abnormal rise, greater than

TABLE II.—*Results of Test Showing Slight Degrees of Liver Inefficiency.*

—	Age.	Amount of lævulose given in grammes.	Blood-sugar per cent. Before taking lævulose.	½ hour after.	1 hour after.	1½ hours after.
A. W. ..	38	50	0·094	0·117	0·120	0·108
E. H. ..	26	30	0·125	0·151	0·148	0·128
M. W. ..	21	30	0·093	0·098	0·107	0·104
R. W. .	29	50	0·109	0·109	0·134	0·118

could be accounted for by experimental error, which we look upon as evidence of varying slight degrees of liver inefficiency. Generally speaking the evidence suggests that the height and length of the blood-sugar curve are in proportion to the degree of liver damage present. In this group the case which showed the greatest rise (E. H.) was more affected than any of the others: while the case (M. W.) with the least rise had practically recovered from the illness, a slight tinge of jaundice in the conjunctivæ being the only remaining sign of disease.

Result of the Test in Control Cases.

In order to control these results in normal individuals and in cases of toxic jaundice, we applied the test to various patients from a medical ward. In Table III.

TABLE III.—*Results of Test in Control Cases.*

—	Age.	Disease.	Amount of lævulose given in grammes	Blood-sugar per cent. before and at half-hour intervals after lævulose.				Result.
1	37	Lymph.	50	0·098	0·104	0·101	0·100	N.
2	17	Ac. neph.	30	0·102	0·104	0·104	0·100	N.
3	—	Med. tum.	30	0·091	0·100	0·102	0·090	N.
4	57	Tab. dor.	50	0·102	0·109	0·110	0·109	N.
5	53	Ob. jaun.; gall-stones.	50	0·110	0·116	0·133	0·120	S.L.I.
6	54	Tab. dor.	50	0·082	0·118	0·125	0·114	S.L.I.
7	70	Malig. liver.	40	0·106	0·134	0·138	0·134	M.L.I.
8	9	Cat. jaun.	25	0·120	0·164	0·176	0·151	Sev.L.I.

Disease.—Lymph., lymphadenoma. Ac. neph., acute nephritis. Med. tum., mediastinal tumour. Tab. dor., tabes dorsalis. Ob. jaun., obstructive jaundice. Cat. jaun., catarrhal jaundice.

Result.—N., normal. S.L.I., slight liver inefficiency. M.L.I., moderate liver inefficiency. Sev.L.I., severe liver inefficiency.

the results of the test in eight different cases are given. They afford evidence of the value that the test may have in determining the efficiency of the liver. We used, as standards of comparison, the results obtained in the study of normal individuals and of cases of toxic jaundice, whereby they are classified as (1) normal, (2) slight liver inefficiency, (3) moderate liver inefficiency, (4) severe liver inefficiency, (5) extreme liver inefficiency.

Normal results were found in four cases—viz., lymphadenoma, acute nephritis, mediastinal tumour, and a tabes dorsalis which had been treated with salvarsan without ill-effects up to within two weeks of the time of examination. In none of these cases was there an appreciable rise in blood-sugar after the ingestion of lævulose. *Slight degrees* of liver inefficiency were found in two cases: (1) A case of obstructive jaundice, which subsequent operation proved to be due to a gall-stone in the common duct; and (2) a case of tabes dorsalis treated with salvarsan up to within three weeks of the time of examination without apparent ill-effects. In these cases lævulose produced blood-sugar rises to 0·125 per cent. and 0·133 per cent., reaching their maximal height in an hour. A *moderate degree* of liver inefficiency was found in one case. This was a case of malignant liver in a man of 70. Here there was a blood-sugar rise to 0·138 per cent. after an hour, which was still up to 0·134 per cent. after an hour and a half. A *severe degree* of liver inefficiency was found in one case. This was a case of catarrhal jaundice in a girl of 9 years. In this there was a rise of 56 mg., reading to 0·176 per cent. after an hour, and to 0·151 per cent. after an hour and a half. This result is of some significance. The girl was not so deeply jaundiced as the man with obstructive jaundice from gall-stone, nor did her urine contain as much bile pigment; yet the test revealed a much greater degree of impairment of liver function. This would suggest that there was much more parenchymatous involvement in the case of catarrhal jaundice than in the case of obstructive jaundice with gall-stone in the common duct.

These results show that the test revealed some diminution in the functional capacity of the liver in four cases, in three of which some damage of the liver could be presumed to be present on clinical evidence. The fourth case had been treated with silver-salvarsan (4·65 g.) up to three weeks before the test was carried out. It is reasonable to assume that the test revealed some latent liver damage which was not apparent on clinical evidence. In four cases the test showed normal liver efficiency to be present. In none of these cases was there clinical evidence of liver disease.

A blood-sugar rise after lævulose would, of course, be obtained in patients suffering from diabetes, but in such cases the history and clinical symptoms should indicate the probable nature of the condition.

The Kidney Threshold for Lævulose.

In certain of the patients investigated we compared the results obtained by estimation of changes in blood-sugar concentration as described above with the results given by the Strauss test for hepatic insufficiency. In the Strauss test[10] lævulose is given by the mouth and the urine is collected for examination at hourly intervals afterwards. If sugar appears in the urine after the ingestion of 100 g. of lævulose it is taken as evidence of decreased liver efficiency. The results of the test appear to be very indefinite. Churchman[11] used it in the Johns Hopkins Hospital and discarded it, coming to the conclusion that it gave no conclusive evidence of the condition of the liver. In our own investigations Strauss's test has given very inconsistent results. Using 50 g. of lævulose, sugar appeared in the urine of some of the normal cases, and did not appear in some of the cases with liver disease. This inconsistency is explained by the fact that the appearance of lævulose in the urine depends more on the "kidney threshold" for lævulose than on the liver's efficiency in storing the sugar. The kidney threshold for lævulose appears to be much lower than the threshold for glucose, and actually varies greatly in different individuals. Graham[12] noted in a case he investigated that the threshold for lævulose was below 0·150 per cent. and for glucose above 0·195 per cent. In six of our cases we found that lævulose (sufficient to reduce Fehling's solution) was excreted in the urine by the time the blood-sugar had reached the following levels:—

	Blood-sugar per cent.
(1) Age 8 years	0·097
(2) ,, 57 ,, ...	0·134
(3) ,, 70 ,, ...	0·130
(4) ,, 46 ,, ...	0·110
(5) ,, 23 ,, ...	0·126
(6) ,, 53 ,, ...	0·133

One case with no apparent disease of the liver gave a normal reaction to the liver function test, yet lævulose appeared in the urine. Using 30 g. of lævulose the blood-sugar levels were: before 0·084 per cent., half an hour after 0·093 per cent., one hour after 0·095 per cent., one and a half hours after 0·084 per cent. A specimen of urine collected one hour after ingestion of the lævulose contained sugar. It reduced Fehling's solution and gave Seliwanoff's test for lævulose. In view of the very slight rise in blood-sugar the presence of lævulose in the urine of this patient is remarkable, but it appears to indicate that in certain subjects a

very small amount of lævulose in the blood will produce glycosuria.

With these points in view the advantage of estimating the efficiency of the liver by a method which excludes the interference of the kidney is obvious.

Conclusions.

A valuable indication of the efficiency of the liver can be obtained by estimating the changes in blood-sugar concentration which follow the ingestion of lævulose. In a healthy adult, with a normal liver efficiency, a dose of 50 g. lævulose will produce no appreciable rise in blood-sugar. In a subject with diminished liver efficiency a definite rise in blood-sugar will result from the ingestion of lævulose. The height and length of the "blood-sugar curve" which portrays this rise will be in proportion to the degree of liver inefficiency which is present. The test affords a means of estimating the degree of liver damage in cases of toxic salvarsan hepatitis and other diseases of the liver. The kidney threshold for lævulose is lower than that for glucose and varies in different individuals. The inconstancy of the threshold for lævulose renders the older method of testing liver efficiency by urinary examination inaccurate.

We wish to express out indebtedness to Prof. H. Maclean, Director of the Medical Unit, at whose suggestion this research was undertaken, and to Colonel L. W. Harrison for granting us facilities for investigating certain of his cases.

References.

1. Hopkins, A. H.: Amer. Jour. Med. Sci., 1915, cxlix., 254.
2. Hammam, L.: Arch. Int. Med., 1917, xx., 761.
3. Maclean, H., and de Wesselow, O. L. V.: Quart. Jour. Med., 1921, xiv., 103.
4. Cammidge, P. J., Forsyth, J., and Howard, H.: Brit. Med. Jour., 1921, ii., 586.
5. Jacobsen, A. T. B.: Biochem. Zeitsch., 1913, lvi., 417.
6. Frank, A., and Melhorn, L.: Jahrb. f. Kinderheilk, 1920, xci., 313.
7. Maclean, H.: Biochem. Jour., 1917, xiii., 135.
8. Langfeldt, G.: Jour. Biol. Chem., 1921, xlvi., 381.
9. Turnbull, H. M.: Medical Research Council Report, No. 56, 1920.
10. Strauss, H.: Deutsche Med. Wochenschr, 1901, xxvii., 757.
11. Churchman, J. W.: Johns Hopkins Hosp. Bull., 1912, xxiii., 10.
12. Graham, G.: Goulstonian Lectures, THE LANCET, 1921, i., 952.

ON THE TUBERCULIN TREATMENT OF BRONCHIAL ASTHMA AND HAY FEVER.

BY PROF. DR. W. STORM VAN LEEUWEN,
DIRECTOR OF THE PHARMACOTHERAPEUTICAL INSTITUTE OF THE UNIVERSITY OF LEIDEN, HOLLAND;
AND
H. VAREKAMP,
ASSISTANT AT THE INSTITUTE.

IN an investigation published three years ago by de Kleijn and Storm van Leeuwen[1] it was found that patients suffering from bronchial asthma have a disordered purine metabolism analogous to the disorder found in cases of gout. If normal individuals are first kept for some days on a purine-free diet, and are then given on one day an excess of a foodstuff rich in purines (250 g. of sweet-bread), they will excrete the surplus of purine (i.e., about 600 mgm.) in one or two days. Our cases of bronchial asthma, however, either took three or four days for this additional excretion or excreted the surplus of uric acid only partially. As a result of this research we treated asthma patients with a purine-free diet, and, in addition, gave them large amounts of calcium chloride (up to 10 g. daily during five successive days). Though in some cases we got good results, this treatment was often unsatisfactory. During a visit to the United States one of the present authors had occasion to study the work of Chandler Walker[2] in Boston on protein sensitisation in asthma cases. After coming back to Holland we took up Walker's method and tested a number of patients for protein sensitisation by Walker's intradermal scarification tests. We had at our disposal about 30 different proteins, including all those which give any likelihood of positive reactions. The tests were applied according to the indications given by Walker, and described by him as follows:—

"A number of small cuts, each about one-eighth of an inch long, are made on the flexor surfaces of the forearm. These cuts are made with a sharp scalpel, but are not deep enough to draw blood, although they do penetrate the skin. On each cut is placed a protein and to it is added a drop of tenth-normal sodium hydroxide solution to dissolve the protein and to permit of its rapid absorption. At the end of half an hour the proteins are washed off and the reactions noted, always comparing the inoculated cuts with normal controls on which no protein was placed. A positive reaction consists of a raised white elevation or urticarial wheal surrounding the cut. The smallest reaction that we call positive must measure 0·5 c.cm. in diameter and any smaller reactions are called doubtful."

In 18 asthma patients tested in this way we found positive reactions in only four cases (22 per cent.). This percentage of positive skin tests accords with the findings of Walker and others; Walker found in 400 asthma patients 78 positive reactions to animal hair and 68 to food proteins; in addition to this he found 33 positive reactions to bacterial protein and 92 to pollen. Sanford some time ago made a preliminary report of protein sensitisation tests made on more than 800 patients in the Mayo Clinic in Rochester; 500 gave negative skin reactions and about 100 showed only doubtful reactions, so that roughly 200 patients, or one-fourth of his cases, showed definite skin reactions.

Relationship of v. Pirquet and Allergic Reactions.

Though in some cases giving positive skin reactions we got good results with specific protein treatment, we deemed it necessary to look out for a mode of treatment applicable to a larger number of cases. In the course of a research on the reactions of normal individuals and patients to intracutaneous injections of various diluted serums, carried out by Landsteiner and the present authors, our attention was drawn to the fact that very often persons who show a strong skin reaction after serum injections also give a very marked tuberculin (v. Pirquet) reaction. This pointed to the possibility of a relationship between the intensity of the v. Pirquet tuberculin reaction and the intensity of allergic reactions—a suggestion strengthened by the following observation:—

In a girl of 15, tested with intradermal injection of 1:10 and 1:100 dilutions of horse serum, swine serum, sheep serum, and rabbit serum, all reactions were negative; on the same day 3 c.cm. of sheep serum were injected subcutaneously. Three weeks after the first injection all reactions, including that to sheep serum, were still negative: thus 3 c.cm. of sheep serum did not suffice to produce a specific sensitisation to this serum. After three weeks—i.e., six weeks after the first injection—skin tests were all very *markedly positive*. On examination the girl proved to have an active lung process of tuberculous origin which had not been manifest on the previous occasions. Her temperature was 38·7° C.

In this case, then, skin reactions were negative and became positive after a tuberculous process had developed, or after a latent tuberculosis had become active.

Once our attention was drawn to the fact that there was probably some relation between a condition of increased sensitiveness to tuberculin and the intensity of allergic reactions, and with the knowledge that many cases of bronchial asthma must be considered as caused by allergic reactions, it was only one step further to suppose a similar relationship to exist between bronchial asthma and sensitiveness to tuberculin, as shown by the v. Pirquet test. Other considerations led to the same view: First, we noticed some time ago that certain cases of hay fever, an illness undoubtedly related from an ætiological standpoint with bronchial asthma, showed extremely strong v. Pirquet reactions; secondly, we had seen a case of hay fever where an intradermal tuberculin test gave an enormously strong reaction, and where the condition of the patient was much improved the next day; which improvement, for lack of any other explanation, had to be ascribed to the action

of the tuberculin. From a theoretical point of view our supposition seemed to be supported by an investigation of Ricker and Goerdeler,[3] who had shown that in rabbits a sensitiveness of the blood-vessels of the omentum to various drugs was greatly increased by experimentally induced local tuberculosis.

These considerations led us to apply the v. Pirquet test to some asthma patients, and we were highly impressed by the very strong reactions given in these cases. Since at that time the results of our treatment of bronchial asthma were, as stated above, not satisfactory, we determined to investigate whether an improvement in asthma cases could be obtained with tuberculin treatment. The results in our first cases were so encouraging that we deemed it necessary to study the matter on a larger scale. We are now in a position to report on 28 cases of bronchial asthma and two cases of hay fever, treated with tuberculin injections.

Number of Patients Showing Positive v. Pirquet Test.

Of 34 cases of bronchial asthma which have come under our care since we started tuberculin treatment, 30 gave a positive v. Pirquet test and four patients were negative. The four negative cases were not treated with tuberculin and will not be considered further in this paper. We had only four cases of hay fever during this period, all of them women—three Dutch and one Hungarian. Two of them had a very strong positive reaction, one a moderate reaction (she refused to be treated with injections), and one (the Hungarian) had a negative reaction and was treated with pollen. So there remained only two cases of hay fever for tuberculin treatment.

Dosage of Tuberculin.

The tuberculin used was Koch's T.O.A. All injections were given subcutaneously. The body temperature of the patient was carefully controlled during the whole course of the treatment. We always began with low doses of tuberculin—mostly 1 c.cm. of a 1 : 100,000 dilution—which gave no general reaction. In our first cases we increased the dose of tuberculin with each injection (providing that the former injection had not produced a temperature reaction) attempting to administer high doses in a relatively short time. During the treatment of these cases, however, we got the decided impression that the latter procedure was wrong, and that it was better to keep to very low doses; this we did in all the later cases. This point will be referred to again.

Additional Measurements.

Although we are quite certain that the tuberculin treatment forms the most important part of our therapy, we took the precaution of making all other conditions as favourable as possible. This was especially necessary, since we wanted a cure to be as short as possible. Moreover, additional measures were indispensable during the first days of the treatment, when the effect of the tuberculin treatment was not yet manifest. The first step was to keep the patient in bed till his asthma was cured. Sometimes external circumstances prevented this, and the patients had then to be given ambulant treatment. We gave a protein-free diet and inhalations of benzyl-benzoate, as mentioned above. Those patients who suffered from chronic bronchitis were given codeine and potassium iodide. After entering hospital, the patients were not allowed to take any patent medicine or to smoke asthma cigarettes: during the first days acute attacks of asthma were immediately cut short with an injection of adrenalin: and we consider it important not to allow the patient to have a single attack of asthma from the moment he enters our care. As a rule these adrenalin injections had only to be given during the first days; many patients received only three or four of them and some only during the first day.

Duration of Cure.

Nearly all the patients suffered from acute attacks of asthma on entering into our care. These attacks generally disappeared for good after the first two or three tuberculin injections; sometimes they did not reappear after the first injection. As a rule, patients were kept in bed till three days had elapsed since the last attack. During the next six days they were gradually allowed to get up and go out; the majority were able to leave the hospital 10–14 days after entrance. As we did not know how long the effect of the tuberculin would last, we continued our tuberculin injections for two or three months, during the first weeks giving an injection once a week, and afterwards once a fortnight. In many cases—especially those of long-standing asthma—a chronic bronchitis was present, which had to be treated after the acute attacks of asthma had subsided. This treatment, of course, took a longer time, and autogenous sputum vaccines were sometimes required. Apart from this complicating bronchitis, it can be stated that as a rule the acute attacks of asthma vanished within a few days of the beginning of tuberculin treatment.

Results of Treatment.

Before entering on a discussion of the results, very brief extracts of the clinical histories of 12 patients treated with tuberculin are given.

(1) E., schoolboy, aged 17. Asthmatic attacks from earliest years; tried all sorts of treatment; many recent attacks. Protein sensitisation tests negative; v. Pirquet ++. Tuberculin treatment (ambulatory) started 9/11/21. Tuberculin 1 : 100,000–1 : 10,000; purine-free diet (P.D.); benzyl benzoate (B.B.). Result: Completely cured after some weeks.

(2) K., kinema attendant, aged 25. Acute attacks of asthma from 8 years old. Very heavy attacks, with extreme dyspnœa and often fever, keep him in bed for weeks. Skin reaction: crab +; swine serum +; v. Pirquet +++. As crab treatment-set was not obtainable, treated with swine serum in increasing doses; reacts very strongly. Result: No improvement; 7/7/20, tuberculin treatment started. 1 c.cm. 1 : 100,000–5 : 10,000, ambulatory treatment. (B.B. and P.D.) On 16/9/20, dose of tuberculin increased from 1 : 10,000 to 2 : 10,000; that night a severe attack of asthma. After that the tuberculin dose was lowered and very gradually increased again. Patient remains free from attacks; then, however, he interrupts treatment and eats meat; 11/5/21 contracts a cold, heavy attack of asthma; again P.D. and tuberculin. Since then no further attack.

(3) N., chauffeur, aged 30. Heavy attacks of asthma since age of 20, becoming worse latterly; last seven years absolutely continuous dyspnœa, very marked bronchitis; patient slept very badly and had to give up profession; v. Pirquet +++. 18/3/21, taken into hospital and tuberculin treatment started: 1 c.cm. T.O.A., 1 : 100,000; doses gradually increased to 8 : 100,000. During first three days adrenalin injection two or three times a day, then stopped; 3/4/21, tuberculin dose increased to 1 c.cm. 1 : 10,000; patients gets attack of asthma, which is cut short with adrenalin; 20/4/21, tuberculin 1 c.cm., 1 : 1000; temperature rises to 38°C. during two days. Patient very ill and many attacks of asthma. 23/4/21, no attack of asthma, tuberculin injections down to 1 : 100,000; 4/5/21, sent home with chronic bronchitis but free from attacks; 6/5/21, back in hospital with violent attack contracted immediately after coming home. In hospital, tuberculin treatment, 8/6/21. Sent to brother in another town. Completely well, takes up profession again, rides in car whole day. 8/7/21, returns to his own home for one night and gets an attack. Advised to move to other house; remains free from attacks for two months, but visits his home against our advice four or five times and gets attacks there every time. The last attack does not disappear on leaving his home. Has to be taken into hospital again.

(4) G., physician, aged 38. Heavy attacks of asthma since age of 16, latterly every night. Had to give up general practice, only does hospital work. V. Pirquet +++. Taken into hospital and tuberculin treatment started. 2/5/21, 1 c.cm. 1 : 100,000. First night no attack and since that time attacks have not returned. Is able to walk 20 kilom. without becoming dyspnœic.

(5) H., colonial official, aged 48. Asthma since age of 30. Of late years about five attacks a day; has to smoke asthma cigarettes constantly to reduce them; v. Pirquet +; chronic bronchitis, emphysema; 26/5/21, taken to hospital, tuberculin treatment started. First day three injections of adrenalin, second and third day two injections. Since 30/5/21 no adrenalin injections necessary. Leaves hospital after 13 days with chronic bronchitis, but absolutely free from dyspnœa. 14/6/21, eats large amount of beef-steak, gets asthma attack, which lasts two days. Since then keeps to P.D., and is free from attacks.

(6) E., typographer, aged 50. Asthma since age of 38; of late years four to five attacks a day, two or three every night. Very dyspnœic; had to give up profession. Has had ambulant treatment with B.B. and P.D., but without tuberculin; afterwards in hospital for three months. In the hospital, condition as before. 26/5/21, tuberculin treatment, ambulatory; 5/6/21, condition improved but not cured; taken into hospital. Tuberculin 1 c.cm. 1 : 100,000, increased to 3 c.cm. 1 : 100,000. During first three days two or three adrenalin injections daily; afterwards free from attacks. 19/6/21, sent home with chronic bronchitis and emphysema (condition much better but not cured); 27/7/21, condition much better. 31/8/21, has had slight attacks. Ordered to fast for two days and after that live mainly on rice and bread with small amounts of protein; condition much better.

(7) G., labourer, aged 40. Has worked in factory with oats for half a year, and since that time has had attacks of asthma which have increased in intensity. Skin reaction with various proteins, *including oat protein*, negative; v. Pirquet ++, ambulatory tuberculin treatment started; 25/5/21, first 1 c.cm. of 1 : 100,000 T.O.A., gradually increased to 3 c.cm. 1 : 100,000. An attack on 10/7/21; no more since that time.

(8) V., commercial traveller, aged 20. Asthma since childhood; last 10 years never free from dyspnœa; very frequent and heavy attacks; severe chronic bronchitis. Skin reaction: dog hair +, v. Pirquet + 30/3/21, admitted to hospital, B.B. and P.D., intramuscular milk injections; condition not much better; 1/5/21, leaves hospital; 8/5/21, treatment with dog hair started; after one month not much success. 8/6/21, tuberculin treatment (ambulatory) started, 1 c.cm. 1 : 100,000, increased till 4 c.cm. 1 : 100,000; no attacks since that time, but chronic bronchitis persists and patient remains dyspnœic; 5/9/21, has had a few severe attacks of asthma. Condition not much bettered since beginning of treatment.

(9) B., married woman, aged 48. Almost daily bronchitis and asthma for 15 years. V. Pirquet +, P.D. and ambulatory tuberculin treatment started. 15/6/21, first dose 1 c.cm. 1 : 100,000 T.O.A., increased to 3 c.cm. 1 : 100,000. After second injection attacks nearly ceased. After third injection no more attacks.

(10) S. I., merchant, aged 28. Asthma from age of one year old, acute attack once a week, lasting two or three days. For a few months B.B. and P.D.; not much bettered. Skin reaction negative, v. Pirquet ++. 29/6/21, admitted to hospital and tuberculin treatment started; first dose 1 c.cm. 1 : 100,000, increased to 3 : 100,000. After first injection one attack. No more since that time. Leaves hospital 10/7/21 cured, with slight chronic bronchitis. Autogenous vaccine. After second injection with 10 million bacteria slight attack of asthma. No further attacks till 30/8/21; one on that day lasting three days, others afterwards. Condition improved after treatment, but not satisfactory.

(11) V., banker, aged 38. Very severe asthma, attacks nearly every day. Not able to sleep in bed for a year. Can only sleep in sitting position; v. Pirquet +. 5/7/21, admitted to hospital and tuberculin treatment started. B.B. and P.D. First dose of tuberculin 1 c.cm. 1 : 100,000 T.O.A., increased to 4 : 100,000. First three days gets one or two adrenalin injections a day, then no more. 8/7/21, completely well; can sleep lying quite flat; 19/7/21, sent home completely cured.

(12) N., schoolboy, aged 13. Asthma since age of 7, about one attack a week lasting one day; v. Pirquet ++; 30/6/21, ambulatory tuberculin treatment started, first dose 0·5 c.cm. 1 : 100,000 T.O.A., increased to 1·5 c.cm. 1 : 100,000. No attacks since beginning of treatment.

Remarks.

From the clinical histories given above it is evident that the most prominent factor of our treatment is the disappearance of the acute attacks of asthma in a very short time. When the acute attacks of dyspnœa disappeared after the first injections of tuberculin one of two conditions remained. Either the patient was completely cured or there was a chronic bronchitis left. It may be stated at once that even in the latter case the improvement was marked. Most of the patients considered themselves to be cured and took the remaining bronchitis very lightly. Our attempts to cure this also were much facilitated by the subsidence of the acute attacks of dyspnœa. It is hardly necessary to mention that in cases of long duration, where emphysema had developed or the heart had become weak, no complete recovery could be obtained.

In tabulating the results of the tuberculin treatment of 28 cases, including the 12 detailed above, the patients could be divided into four groups, as follows: Group I. contained 18 patients who are completely cured; Group II. contained four patients whose acute attacks of asthma completely or almost completely disappeared, but where a chronic bronchitis remained, which though very much improved was not completely cured; Group III. contained five patients whose condition was improved by treatment, but who were not cured, some having dyspnœa due to bronchitis or a weak heart, and three having occasional attacks of asthma, acute but never so severe as before treatment; Group IV. contained one case (No. 8 in the above list) where tuberculin treatment failed to improve the patient's condition. Roughly speaking, Groups I. and II. (78 per cent. of all cases) contained cases where tuberculin treatment did all that could be expected. Group III. (18 per cent.) contained cases which were decidedly improved; Group IV. contained the failures (about 4 per cent.).

Late Results.

It is not possible to state whether the cures obtained will be lasting. We have only had one relapse till now, but our first case dates from 15 months ago and the latest case only two months. It is to be expected that some relapses may occur, and if this be the case we shall treat them again. Though our time of observation is short, and though we cannot give any guarantee that all our patients now considered to be cured will remain so, we feel justified in publishing our results; for even if all our patients relapse within a year, we should still consider that they had greatly benefited by the treatment. Most of them were in a deplorable condition on coming under our care, having been dyspnœic for years, some of them for decades. Some had not had one quiet night for a long time; three were in danger of becoming morphinists; others could only do their work by injecting themselves with adrenalin or by smoking asthma cigarettes every two hours; four were in danger of having to give up their professions. All these people were brought to a normal or almost normal life again by a cure of 10–14 days' duration; and certainly their state of health (especially their bronchitis) must be considered as improved, even if relapses occur.

As has been stated above, we only started our tuberculin treatment after having tried Chandler Walker's specific protein therapy, and it is fair to consider how far we were justified in preferring our therapy to his. We must here state that we value Walker's work highly, and we are of the opinion that his treatment may be very beneficial. Walker obtains a relief of asthma in about 80 per cent. of cases, showing a specific skin reaction to proteins; we also record relief in about 80 per cent. of our tuberculin cases, so that, in this respect, there is not much difference between his results and ours. There is, however, one factor which gives a very decided advantage to our method. According to the statistics of Sanford (vide above) sensitisation to animal and food proteins is only found in 25 to 30 per cent. of the cases; Walker finds positive tests in 48 per cent. of his cases, but in this figure are included a number of cases with reactions to pollen only, belonging to the type of asthma occurring only in summer. Since nearly all our cases had attacks of asthma during the whole year, only 20 to 30 per cent. could have been expected to be benefited by Walker's treatment. (In reality our number was still lower.) On the other hand, from our entire number of asthma patients (34) the greater part (30)—i.e., 89 per cent.—showed a positive tuberculin reaction, so that all these could be treated according to our method.

A minor advantage of this method is that the necessary material, tuberculin, can everywhere be had in any amount, whereas the specific proteins necessary in the Walker treatment are only manufactured—so far as we know—in the United States; work with Walker's proteins in Europe is therefore handicapped to a certain extent.

It may be regarded as a disadvantage of our method that the administration of tuberculin is not a trivial matter, and requires great care and supervision of the

patients. As has been described above (Cases No. 2 and 3), we twice induced a severe attack of asthma in patients by giving too high doses of tuberculin. This mistake now no longer occurs, since we know that only very small doses of tuberculin are necessary, or even advisable. Whether Walker's cure is less dangerous than ours we are not in a position to decide. In the cases where we used it we never saw dangerous or even disagreeable reactions. If, in addition to the tuberculin treatment, injections with autogenous sputum vaccines are given, great care must be taken (as stated by Walker also), since an overdose of vaccine may be dangerous.

Finally, it may be remarked that, in those cases in which the tuberculin test is negative, we still have the chance of finding a sensitiveness to one of Walker's proteins, and such cases can then be treated accordingly. Our number of cases falling into this class is too small to justify a publication of the results, and the same holds for the few cases in which we could not find a sensitiveness with either of the methods. These patients were treated in a different way.

Difficulty of Explaining Effects Produced.

It seems to us that the results obtained with our method are very clear and need little additional discussion. The prominent fact is that, in a very high percentage of cases, the acute attacks of asthma disappear after a few injections. It is far more difficult to give a satisfactory explanation for the effects obtained.

Since we are not able to give a decisive explanation only a few words will be said on this matter. The starting-point of the tuberculin treatment was our supposition that a state of hypersensitiveness to tuberculin might be a factor which raises the susceptibility of patients for allergic or anaphylactic reactions (including asthma and hay fever). This hypothesis is strengthened by the results of the experiments of Ricker and Goerdeler, mentioned above, who found a locally increased sensitiveness to drugs in rabbits with experimentally induced tuberculosis of the omentum. Further support for our hypothesis was obtained, first, from our own observations on increased serum skin reaction in children suffering from an acute exacerbation of tuberculosis; secondly, from the fact, revealed during our work, that many patients suffering from asthma or hay fever show exceedingly strong v. Pirquet reaction; and, thirdly, from the fact that in two patients we induced a strong attack of asthma by injecting an overdose of tuberculin. This last observation shows that there certainly exists a relation, whatever its nature may be, between tuberculin reaction and some cases of asthma. This last conclusion is, moreover, strengthened by the result of our treatment.

If it is true that a condition in the human body which gives rise to a strong v. Pirquet reaction also causes an increased susceptibility to allergic reactions, two qualifications must be made. First, the condition which causes a strong v. Pirquet reaction cannot be as a rule an *active* tuberculous process, since in none of our cases was this found, and the sputums of our patients never contained tubercle bacilli. Secondly, tuberculosis (or rather a condition which produces a strong v. Pirquet reaction) cannot be the *only* factor which is able to create a susceptibility to asthma, since 11 per cent. of our asthma patients gave a negative v. Pirquet test.

Conclusion.

If our hypothesis is true, it still remains difficult to explain *why* a state of hypersensitiveness to tuberculin increases the susceptibility for allergic reactions, and why injection of small amounts of tuberculin has a curative effect. We do not want to enter upon further speculation on this point; we only desire to draw attention to the fact that, in our opinion, the tuberculin treatment of asthma has to be carried out with injection of *small* amounts of tuberculin, and that it is unwise in these cases to try to raise the dose very high in order to obtain an immunisation. Research is going on in this institute at the present moment with the aim of proving the correctness of our hypothesis. The results of this work will be published later.

We are greatly indebted to the Arlington Chemical Company for their courtesy in placing at our disposal the different proteins used in the sensitisation test.

Note.—After finishing the present paper we read an abstract in the *Journal of the American Medical Association*, Oct. 15th, 1920, p. 1030, of a publication from Pietroforte in *Riforma Medica* (Naples), July 17th, 1920, No. 29, on tuberculin treatment of asthma. Though our work was undertaken independently of Pietroforte, it is only fair to state that the priority of the tuberculin treatment of bronchial asthma belongs to Pietroforte. As far as we are aware he did not extend the treatment to hay fever.

References.—1. De Kleijn, A., and Storm van Leeuwen, W.: Uber Störungen im Harnsäure-Stoffwechsel bei Patienten mit Asthma Bronchiale und Rhinitis Vasomotoria. Acta Otolaryngologica, vol. i., Fasc. 4, p. 571. 2. Walker, Chandler: Archives of Internal Medicine, 1918, vol. xxii., p. 466. This paper contains a list of all of Walker's papers on the subject. 3. Ricker, G., and Goerdeler G.: Arch f. d. Ges. Exp. Med. 1915, iv., p. 1.

THE STANDARDISATION OF SUSPENSIONS OF RED BLOOD CELLS FOR WASSERMANN TESTS.

BY JOSEPH W. BIGGER, M.D.DUB., D.P.H.,
MEDICAL INSPECTOR, LOCAL GOVERNMENT BOARD, IRELAND.

FROM time to time cases are recorded of a sample of serum having been sent, for a Wassermann reaction (W.R.) test, to different pathologists, some of whom have reported it as positive and some as negative. In bacteriology, as in everything else, mistakes are possible; but apart from these, there remain some cases in which the inconsistencies of the findings are due not to gross error but to differences in technique. Attempts to standardise the W.R. can never be completely successful, as each of the four reagents employed in the test—complement, antigen, amboceptor and red blood cells—is more or less variable. The first three are usually titrated and accurately diluted prior to the test proper, but this is not done in the case of the suspension of red blood cells. Several workers have pointed out the importance of standardising the strength of the suspension used, but up to the present the majority of bacteriologists are content to employ suspensions which contain a known percentage of the deposit of cells obtained by centrifuging, or which are judged, by their appearance, to be of about the usual strength. Neither method is at all accurate, since the volume of deposit obtained from the same volume of blood depends on a number of factors—the type of centrifuge, its rate of revolution, the duration of spinning, &c.—while the judgment of strength by appearance depends on memory, which in such matters is unreliable. The number of cells in each cubic centimetre of the suspensions used by a careful and experienced Wassermann worker in three successive batches of tests was accurately determined and found to be 505 millions, 328 millions, and 484 millions respectively. It is probable that the suspensions used by other workers show variations as great as, or even greater than, these.

In order to determine the effect, on the apparent hæmolytic strength of complement, of variations in the strength of the red cell suspensions, the following experiment was made. A suspension of cells (A) was standardised as described later. Using 0·5 c.cm. of this suspension and 1·0 c.cm. of guinea-pig serum, diluted 1/20, the total volume in each tube being 2·5 c.cm., the minimum hæmolytic dose (M.H.D.) of the amboceptor was determined. The amboceptor was then diluted, so that 0·5 c.cm. of its solution contained 5 M.H.D. Three other suspensions of the red cells were made, B containing 10 per cent., C 50 per cent., and D 100 per cent. more cells than A. The

M.H.D. of the complement was accurately determined for each cell suspension. Each tube contained—

Amboceptor (5 M.H.D.)	0·5 c.cm.
Cell suspension (A, B, C, or D) ..	0·5 c.cm.
Guinea-pig serum	x c.cm.
Saline	(1·5–x) c.cm.

The tubes were heated in a water-bath at 37·5° C. for two hours and examined. The smallest amount of guinea-pig serum which produced total hæmolysis was taken as the M.H.D. of the complement in the case of each cell suspension (Table I.). The results of a similar experiment are recorded in Table II.

TABLE I.

Cell suspension.	Relative number of cells per unit volume.	M.H.D. of complement.	Relative M.H.D.
A	100	0·0105 c.cm.	100
B	110	0·0115 ,,	109
C	150	0·0175 ,,	166
D	200	0·0250 ,,	238

TABLE II.

A	100	0·009875 c.cm.	100
B	110	0·0102 ,,	103
C	125	0·0135 ,,	137
D	150	0·0155 ,,	157

It is clear from these results that variations in the strength of suspension used exercise a marked effect on the apparent strength of complement. If the M.H.D. of the amboceptor had been found for each cell suspension, the differences in the M.H.D. of the complement would probably have been less, but it must be remembered that it is not usual to titrate amboceptor on every occasion on which a batch of serums is tested. In general the M.H.D. is ascertained when a new amboceptor is brought into use and, on subsequent occasions, dilutions containing three or five times this amount are employed.

Possible Variations of Results.

Now consider two bacteriologists, X and Y, who are performing W.R. tests, using the reagents employed for the experiment recorded in Table I. X uses cell-suspension A, and Y uses cell-suspension C. X finds the M.H.D. of complement to be 0·0105 c.cm., and makes two dilutions, one containing 0·0315 c.cm.—i.e., three doses—and the other 0·0525 c.cm.—i.e., five doses—in 0·5 c.cm. Y finds the M.H.D. to be 0·0175 c.cm., and his three-dose dilution contains 0·0525 c.cm., while his five-dose dilution contains 0·0875 c.cm. of guinea-pig serum in 0·5 c.cm. The results obtained by X and Y in testing a batch of serums are bound to be discordant, since the three-dose dilution of Y contains the same amount of serum as the five-dose dilution of X. Probably the two will agree as to many of the serums which are frankly negative or strongly positive, but some of X's strong positives will be recorded by Y as positives, while Y will find many of X's positives or weak positives to be negative.

It is unnecessary further to labour the point that variations in the strength of the cell suspension may cause errors in the results of the W.R. test. It follows, therefore, that some effort should be made to obtain suspensions of approximately constant strength, especially if this can be done without unduly adding to the labour of the test. Probably the most accurate method of standardising would be by counting the number of cells contained in a known volume of a suspension and then diluting this until it contained a definite number, previously decided upon, in each cubic centimetre. This method would, however, be tedious, and—unless the counts were carefully done, and duplicated or triplicated—liable to considerable error. Lewis[1] has advised a method of weighing a known volume of suspension, contained in a specific-gravity flask, and, by comparing its weight with the weight of equal volumes of saline and of a standard suspension, finding the amount the new suspension must be diluted to produce a standard suspension. We do not think that this method will be widely accepted by bacteriologists. It necessitates the bringing of the specific-gravity flask and suspension to a constant temperature of 60° F. in a water-bath, and accurate weighings in a sensitive chemical balance, which is not always available in bacteriological laboratories.

A Colour Method of Comparison.

In the method here proposed, the colour of the carboxyhæmoglobin produced by treating the suspension of red cells with water and passing carbon monoxide gas is compared with that of the standard tube of a clinical hæmoglobinometer. This method was considered by Lewis, but abandoned, "principally owing to the error inevitably introduced in the final colour matching." It is believed, however, that the method is capable of a considerable degree of accuracy, as will be shown later.

The ultimate standard adopted was the carboxyhæmoglobin solution of a Haldane's hæmoglobinometer. The advantages of using such a standard are obvious; it is constant, easily obtainable, and easily renewable. The standard suspension of cells (S.S.) decided upon was such that when one part of it was mixed with three parts of water and CO passed through the mixture, the resulting solution of carboxyhæmoglobin was of exactly the same tint as that in a Haldane's tube when examined in the comparison tube of the hæmoglobinometer set. Since the standard suspension is four times as rich in hæmoglobin as Haldane's solution, its strength can be conveniently described as 4H. It may here be remarked that this system of notation is a convenient one to use in connexion with any work on suspensions of red blood cells. If a particular suspension of cells be tested and its strength recorded as nH, it is possible at any time or in any place to make a fresh suspension of the same strength.

Technique of Standardisation.

The technique of standardisation is as follows:—

1. A suspension of cells (N.S.) is made which is stronger than the one required.

2. 1·0 c.cm. of N.S. is measured accurately with a 1 c.cm. pipette into each of six or eight clean dry test-tubes—(*a*), (*b*), (*c*), (*d*), &c.

3. To (*a*) add 3·0 c.cm. of water, to (*b*) add 4·0 c.cm., to (*c*) add 5·0 c.cm., to (*d*) add 6·0 c.cm.

4. The contents of each tube are mixed and coal-gas bubbled through by means of a fine glass tube, until the carboxyhæmoglobin colour is fully developed. A portion of each is transferred to the comparison tube of a Haldane's hæmoglobinometer set, and its colour compared with that of the standard tube. Some of the dilutions will be found to be too dark in colour and some too light. Suppose (*a*) and (*b*) are too dark and (*c*) too light. (It is not necessary to wash out and dry the comparison tube after each dilution is tested. It is quite sufficient to empty it, shake it out, and rinse with a small quantity of the next dilution to be tested.)

5. To (*c*) add 4·5 c.cm. of water, mix, pass gas, and compare. Suppose (*c*) is too light.

6. To (*f*) add 4·2 c.cm. of water, mix, pass gas, and compare. Suppose (*f*) is just too dark.

7. To (*g*) add 4·3 c.cm. of water, mix, pass gas, and compare. Suppose (*g*) exactly matches the standard tint. It is then evident that 1 c.cm. of N.S. + 4·3 c.cm. of water gives a solution containing exactly the same amount of hæmoglobin as Haldane's. The amount which the N.S. must be diluted to produce S.S. can now be calculated. In order to save trouble a formula may be used. If x c.cm. is the amount of water necessary to add to 1 c.cm. to give Haldane's tint, $\frac{x-3}{4}$ c.cm. of saline must be added to each 1 c.cm. of N.S. to produce S.S. = 4H. In the example given, x = 4·3 c.cm., so 0·325 c.cm. of saline must be added to each cubic centimetre of N.S., or 13 c.cm. to 40 c.cm.

Since the whole operation of preparing a standard suspension takes about 10 minutes, it does not add unduly to the time necessary to perform a W.R. test. No difficulty was experienced in colour matching, and it was found possible to determine the value of x to the first decimal place with accuracy. An amount of 0·1 c.cm. greater than x was obviously too light in colour and 0·1 c.cm. less too dark. The strength of

[1] Lewis, Frederick C.: On the Serum-diagnosis of Syphilis, THE LANCET, 1920, i., 11.

the suspension used (4H) is one which has been found suitable for the W.R. method in use. This method is identical with Harrison's (No. 1 in the Medical Research Committee's Report on the Wassermann test),[3] except that two volumes of sensitised cells are used, the tubes containing:—

Patient's serum (1/5)	0·5 c.cm.
Extract (or saline, in control tube) ..	0·5 c.cm.
Complement (three or five doses) ..	0·5 c.cm.
Sensitised cells	1·0 c.cm.

To sensitise the cells, one volume of S.S. is mixed with one volume of a solution of amboceptor containing 5 M.H.D. in 0·5 c.cm. This strength of suspension will be found to be somewhat weaker than that used by many bacteriologists, but it has been found very suitable for W.R. work as it gives sharp results. If another strength—say pH—be desired, the standardisation is carried out as before, but the amount of saline necessary to add to 1 c.cm. of N.S. will be $\frac{x-(p-1)}{p}$ c.cm. If Harrison's method is followed exactly one unit (0·5 c.cm.) of sensitised cells is added to each tube. This contains one-half unit (0·25 c.cm.) of suspension. A suitable strength to make the S.S. would be 8H.

In order to test the accuracy of this method of standardisation, samples of sheep's blood were obtained from a slaughter-house at intervals of one or more weeks. The red cells were washed and two standard suspensions (4H) of each were made. The number of cells in each was counted, three counts, each of at least 1000 cells, being made and averaged. A Thoma (Hawksley) chamber was used for counting. Table III. gives the results of this control.

TABLE III.

Blood No.	Suspension.	Average of 3 counts (millions per c.cm.).	Average of A and B.	Percentage error of A and B as compared with average of A and B.	Percentage error.
1	A	518	512·5	1·1 %	+ 4·0 %
	B	507			− 1·8 %
2	A	476	468	1·7 %	+ 4·4 %
	B	460			− 7·6 %
3	A	511	497	2·8 %	+ 2·6 %
	B	483			− 3·0 %
4	A	489	503	2·8 %	− 1·8 %
	B	517			+ 3·8 %
5	A	501	497·5	0·7 %	+ 0·6 %
	B	494			− 0·8 %
6	A	502	508·5	1·3 %	− 0·8 %
	B	515			− 3·2 %

Average of the 12 suspensions 498

It will be observed that the greatest error of any pair of suspensions as compared with the average of the two is 2·8 per cent., and that in only one standardisation is the error greater than 5 per cent. when compared with the average of the 12. It is possible that a certain amount of error may be introduced by differences in the blood of individual sheep. In some the size of the corpuscle or its hæmoglobin content may be different from what is found in others. A consideration of Table III. would lend some support to this view, but there is no reason to suppose that such variations should be greater in the case of healthy adult sheep than in the case of normal men. No divergences which would render this method of standardisation unreliable were revealed in the controls dealt with above. It may therefore be claimed that this method is one which can be recommended as sufficiently accurate for use in the W.R. test. It may be noted that the strength of suspension chosen (4H) corresponds very closely to a count of 500 millions of red cells per cubic centimetre.

Summary.

1. Methods usually adopted for making suspensions of red blood cells for the W.R. test are very rough, and the resulting suspensions vary greatly in strength.

2. Such variations may introduce considerable error in the results of the test.

3. A simple and rapid method of standardising red blood cell suspensions is described.

4. This method was controlled by counting the number of cells per cubic centimetre in 12 suspensions, and was found to be accurate.

5. It is suggested that the notation here adopted (in terms of Haldane's solution) might be used to record the strength of any suspension of red blood cells since a new suspension of similar strength could be prepared when required.

[3] Medical Research Committee, Special Report Series, No. 14, 1918.

SEROUS MENINGITIS.

BY A. GURNEY YATES, M.A., M.D. EDIN., M.R.C.P. LOND.,
PHYSICIAN, SHEFFIELD ROYAL INFIRMARY.

SEROUS meningitis was first described by Quincke [1] in 1893 and a considerable number of cases have since been reported, but the condition does not appear to have received the more general attention which it deserves. Pathologically, the essential condition is an increase in the intracranial pressure due to an excess of cerebro-spinal fluid. This excess is produced, not so much by mechanical obstruction—though the latter may be a factor in certain cases, as when the foramina in the roof of the fourth ventricle are blocked by exudate or old thickening—but by an inflammation of the meninges and ependymal lining of the ventricles which never passes beyond the serous stage. The ventricles are usually distended with clear fluid, but in some instances the fluid is mainly in the subarachnoid space, and there may be definitely localised collections at the base or elsewhere. A remarkable case has just been published by C. E. Reynolds,[2] in which fits of varying type occurred, the variations being due to alterations in the position of the fluid brought about by changes of posture.

Description of Cases of Serous Effusion.

Excluding grossly obstructive cases, such as those due to tumour or obliteration of the large sinuses, cases due to tubercle and syphilis, and non-inflammatory cases secondary to cardiac and renal disease, there still remains a group of cases, acute and chronic, of which a non-purulent inflammatory effusion is the essential feature. Associated with the serous effusion a variety of conditions have been described. Quincke found the ependyma thickened and in some cases granular. P. Merle [3] described inflammatory changes in the meninges and choroid plexus as well as in the ependyma, but he maintained that the last was the most frequent and the most important. In some cases an encephalitis was found in addition, and other conditions described include obliteration of the aqueduct of Sylvius and of the foramina of Monro, and adhesions isolating some part of the ventricular cavity.

Joel [4] described a case secondary to a fœtid discharge from the left ear, which was at first thought to be an extradural abscess, but the only condition found at operation was œdema of the meninges and brain tissue, which recovered completely. W. B. Warrington [5] found in a case secondary to a left-sided otitis merely increased fluid and congestion of the meninges which cleared up completely. In another case he described thickening of the floor of the fourth ventricle by granulation tissue. Nonne [6] recorded two cases, one following injury in which nothing was found except great dilatation of the ventricles, and the other apparently due to mental shock, in which there was hydrocephalus with fresh granulations in the ependyma. Other writers have described similar conditions and microscopically perivascular infiltration, and in cases of longer standing fibrosis has been found in the ependyma and pia-arachnoid. A case published by Parkes Weber [7] in 1902 in a woman of 22 showed, in addition to great distension of the ventricles, thickening of the ependyma

and round-celled infiltration, mainly perivascular in distribution. The ependyma of the fourth ventricle was mainly involved.

It is evident that such conditions may lead on the one hand to increased production, and on the other to defective absorption of the cerebro-spinal fluid, and in this way bring about an internal hydrocephalus, which is clinically the essential feature of the disease. In an acute form it occurs associated with middle-ear disease in children. J. S. Barr and J. Rowan [8] found optic neuritis in 11 out of 160 cases of suppurative otitis, and in a further 39 there were vascular changes in the fundus, not amounting to optic neuritis, but sufficiently definite to suggest an increased intracranial pressure. It may also follow inflammatory conditions in the nose and accessory sinuses, the acute fevers, and gastro-intestinal infections. The case above referred to described by Parkes Weber followed two attacks of erysipelas of the head, and Quincke has also described a case which presented the same sequence of events. In a certain number of cases the origin has remained obscure, and in one or two instances it has been attributed to mental shock.

This group of cases is thus of very varying ætiology, and consists of cases of serous effusion within the skull, analogous, as Parkes Weber has pointed out, to a serous effusion in the pleura or pericardium. It brings into line cases of infantile hydrocephalus which are probably at the outset inflammatory, cases of chronic internal hydrocephalus in the adult—which often simulate an intracranial tumour—and the more acute cases which may simulate such conditions as purulent meningitis, cerebral abscess, and sinus thrombosis. The most characteristic symptoms are those of cerebral compression, headache, optic neuritis, vomiting, slow pulse, and altered mentality. The onset may be abrupt or gradual, and in the acute cases there is sometimes fever, but it may be difficult to say how far this is due to the serous effusion and how far to the primary disease. Somnolence is frequent and there is sometimes coma. Diplopia, strabismus, and nystagmus are frequently found. Nystagmus is probably due in otitic cases to disease of the labyrinth, and the diplopia to paresis of the external recti. Symptoms referable to more localised interference with cerebral function occur in some cases, such as monoplegia, hemiplegia, and Jacksonian attacks. The knee- and ankle-jerks are often diminished and sometimes absent. Cervical rigidity is also of frequent occurrence; it is usually slight and unaccompanied by retraction of the head. On lumbar puncture the cerebro-spinal fluid is clear, under considerably increased pressure, and usually sterile. On chemical and cytological examination it is often normal, but there may be a lymphocytosis, an increase in protein content, and an absence of the normal reduction of Fehling's solution.

Variability in the severity of symptoms from time to time is frequently observed, a fact of some value in diagnosis, and also of interest in connexion with Barr and Rowan's observation that the optic neuritis is less liable to lead to atrophy and blindness than the optic neuritis of a cerebral tumour. Remissions in severity of pressure would conceivably lessen the tendency to permanent changes in the optic nerve, and such remissions would be more likely to occur when the pressure is due solely to fluid than when it is due to a solid growth. This observation was based entirely upon a study of otitic cases, which are usually acute, but T. R. and E. E. Glynn [9] published a case in which very severe symptoms, including optic neuritis with almost complete blindness and serious mental impairment, lasted for nearly five years, and which recovered completely and regained normal vision after a spontaneous discharge of cerebro-spinal fluid from the nose. On the other hand, total blindness may result quickly. Parkes Weber quotes a case in which total blindness came on within three months of the onset of the illness.

Cases Illustrative of Acute Form.

The following two cases recently under my care illustrate the more acute form of the disease. One was due to acute otitis in a child, the other of uncertain origin.

CASE 1.—A boy, 7 years of age, entered hospital on March 5th, 1921. A month previously he had been suddenly seized with vomiting, earache, and a slight purulent discharge from the left ear. Within a few hours the discharge ceased and the vomiting and earache abated, but he developed a stiff neck. The muscles on the left side of the neck were tender and the head was drawn to that side. This also disappeared in a few days, but he did not return to normal health. He was pale, somnolent, sweated a good deal, and complained of earache and occasional headache. There was occasionally a slight evening rise of temperature. A trivial blow on the head some months before, and measles when four months old, were the only points to note in the previous history.

Examination revealed a slight fulness around and below the left mastoid process and distinct tenderness on pressing the bone. A tender gland could be felt just behind the angle of the jaw. There was no discharge from the ear but the tympanic membrane was congested. Examination of the optic discs showed commencing optic neuritis. There was no head retraction, the stiffness of the neck had gone, and Kernig's sign was absent. The knee- and ankle-jerks were diminished and the plantar reflex was normal. He was pale and listless and looked distinctly ill. There was no diplopia. During the next few days there was a slight irregular pyrexia never exceeding 100 and the pulse varied from 60 to 110. The leucocyte count was 11,000. After five days the temperature subsided and the pulse became slower, keeping steadily between 60 and 70. At the same time the mastoid tenderness and tympanic congestion became appreciably less. There was no improvement, however, in the general condition, and the optic disc in each eye showed a swelling of two dioptres.

On March 17th a lumbar puncture was done; the fluid was under greatly increased pressure and was clear. It was sterile and negative to the Wassermann test. There was no increase of protein, and it reacted normally to Fehling's solution. It contained six lymphocytes per c.mm. Following lumbar puncture the pulse rose and the general condition improved. Five days later the optic neuritis had gone and the patient was discharged on April 1st apparently in normal health. When seen recently he was perfectly well.

CASE 2.—This case, also recently under my observation, presents several features of unusual interest. A man, 24 years of age, a bootmaker by occupation, was admitted to hospital on March 27th, 1921, complaining of intense pain in and around the right eye and to some extent also at the back of the head. He had double pneumonia two years previously and an injury resulting in the loss of the left eye in childhood. He also had a slight scalp wound in the right parietal region 17 years before. He had slight pain behind the right eye occasionally for about a year but it had never interfered with his work. He was taken suddenly ill on March 12th whilst sitting talking in a friend's house. He was noticed to look queer and said he heard some music which seemed to come from a cupboard on his left-hand side. He described it afterwards as being like "a lot of bands playing." He almost immediately lost consciousness and the head and eye deviated to the left. There were slight movements of both legs and he went very pale. In a few moments he recovered and went to see a football match, but on his return he had another attack which was similar to the first one, except that he heard no music. The head and eye deviated to the left as before. Following upon this he had a frontal headache of moderate severity for a fortnight, and then began to have extremely severe pain around the right eye and in the occipital region, and the pulse was noticed to be slow. He vomited once only on the day before admission to hospital.

On examination there was well-marked tenderness over the right frontal sinus as well as over the lower orbital margin, and the eye itself was tender. Transillumination of the right frontal sinus was indefinite, but there were some patches of muco-pus in the region of the right middle turbinal. The pupil was large but reacted normally to light. The optic disc showed no change, the vision was 6/6, and there was no paralysis of any of the cranial nerves; the socket of the left eye was healthy and the ears were normal. The pulse was 50, the temperature normal, and so far as could be ascertained there had not been at any time any pyrexia. The patient was mentally alert, all the deep reflexes were diminished, and there was no rigidity. Kernig's sign was not present. The tongue was clean, the breath was not foul, and he was neither emaciated nor constipated. The urine was normal and the blood gave a negative Wassermann reaction. The condition remained unchanged for several days, the temperature being normal and the pulse varying between 45 and 55. On April 6th commencing optic neuritis was observed, and on April 8th the right frontal sinus was opened by my colleague Mr. W. S. Kerr as the very definite and localised tenderness suggested the possibility of a sinusitis. The sinus, however, was found to be perfectly healthy.

After the operation the pain completely disappeared for a time and the pulse-rate increased to normal, but otherwise his state remained the same. On the 16th slight paresis of the right external rectus was noticed, and a few days later the optic neuritis had become severe. There were now four dioptres of swelling and some hæmorrhages. The pulse-rate was now more rapid, varying between 80 and 120, and the deep reflexes were absent. The vision was still 6/6. As no improvement occurred, and the sight appeared to be threatened in the patient's only eye, he was trephined on May 17th over the right temporo-sphenoidal lobe by Prof. A. M. Connell. On exposing the dura no pulsation was seen and when the dura was opened the pia-arachnoid was found to be congested and presented a bright red granular appearance. The convolutions were distinctly flattened. On exploration a deep resistance was felt, apparently due to the distended lateral ventricle. This was tapped and considerable amount of fluid withdrawn. The pulsation of the brain immediately became normal, the dura was brought together, and the wound closed.

Following operation recovery was rapid. On June 24th the wound was completely healed, there was no hernia at the site of operation, and the patient felt perfectly well. His vision was normal and the optic neuritis had completely gone. He is now at work, and except for an occasional slight pain similar to the one he had prior to the onset of his acute symptoms he is perfectly well.

In some respects this latter case at first resembled frontal sinus disease, but this was finally excluded at the first operation. With the occurrence of a slow pulse, optic neuritis, and a sixth nerve palsy it became evident that some condition causing increased intracranial tension was present, and the nature of the first fit suggested a localisation in the right temporo-sphenoidal lobe irritating the auditory centre. The acute onset was against its being a tumour, and the patient did not present the foul tongue and general toxæmic state of a cerebral abscess. The absence of pyrexia was strongly against suppurative meningitis or sinus thrombosis, and the possibility of its being a serous meningitis was confirmed by the finding of congestion of the meninges at the site of operation and the rapid recovery following decompression and the evacuation of fluid under pressure from the lateral ventricle. The cause of the condition was not clear; it was difficult to associate it with a slight injury 17 years before, and it seemed to be more likely that an infection of low virulence had spread to the interior of the cranium, possibly from the slight old-standing disease in the ethmoid region.

Remarks.

It would appear to be worth emphasising that in cases in which the signs and symptoms of increased intracranial tension develop acutely serous meningitis should be kept in mind and a search made, first for acute or chronic otitis, and if this is not found, for some other cause, such as inflammation in the accessory sinuses of the nose or some more generalised source of infection. The diagnosis from the more grave acute cerebral lesions—abscess, sinus thrombosis, purulent meningitis—may be very difficult. In serous meningitis however, one does not usually find the rigors and high fever of a sinus thrombosis, the foul tongue, the general toxic appearance, and the leucocytosis of a cerebral abscess, and a lumbar puncture will usually distinguish a purulent meningitis. In the more chronic cases in adults (pseudo-tumour) the difficulty is probably greater, because the similarity clinically between a tumour without definite localising signs and a slowly developing serous meningitis may be very close indeed.

The prognosis of the acute cases is much more favourable than that of the other acute conditions which lead to an increased intracranial pressure, and many recorded cases have recovered. The first essential in treatment is to find the primary source of infection and to deal with it in the most appropriate manner. The free drainage of pus from the temporal bone may be all that is needed to bring about the rapid disappearance of all cerebral symptoms. In some cases it is true that serous meningitis has developed after such operative interference, a course of events which recalls the occasional occurrence of disseminated tubercle after an operation on a localised focus, but this consideration should never deter the surgeon from operating when the primary condition demands it; it is rather an argument for the freest possible drainage, especially as it is likely enough that such a case would, if left, develop some more serious cerebral complication.

If the intracranial pressure does not quickly subside steps should be taken to relieve it, and in the more acute cases this can most readily be done by lumbar puncture, a procedure which is also of the greatest possible value in the diagnosis. When serous meningitis is the only intracranial lesion present it is not, as a rule, necessary to open the dura. In the more chronic cases, however, which may closely simulate a cerebral tumour—a condition in which lumbar puncture is known to be dangerous—greater caution is desirable; until the diagnosis can be placed upon a surer footing it is a wise rule to refrain from lumbar puncture, and to resort to decompression in cases where a tumour cannot with reasonable certainty be excluded, and probably also in those where epileptiform convulsions with unconsciousness have occurred. It was this consideration which led me to refrain from doing a lumbar puncture in the second of the two cases described above.

References.—1. Sammlung klin. Vortr., Leipz., 1893, No. 67. 2. Brit. Med. Journ., 1921, ii., 66. 3. Etude sur les Ependymites Cérébrales, Paris, 1910. 4. Deutsch. Med. Woch., 1895, xxi., 125. 5. Quart. Jour. Med., vii., 102. 6. Deutsch. Zeitschr. f. Nervenheilk., 1904. 7. Brain, 1902, xxv., 140. 8. Brit. Med. Jour., 1910, i., 737. 9. Ibid., 1905, i., 871.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF PARTIAL PYLORIC STENOSIS (HYPERTROPHIC): FINNEY'S OPERATION.[1]

BY R. P. ROWLANDS, M.S. LOND., F.R.C.S. ENG.

THE case here recorded is a typical instance of partial stenosis due to spasm and hypertrophy of the pyloric sphincter.

The patient, G. W., a male aged 32, has supplied the following details of the early history of the case: "Pain began about nine years ago (1912) on and off, after food, until 1915, when I first started vomiting, having about three attacks in that year lasting a week each time they occurred. In the following year (1916) my service in the army began, and from then onwards I had pain and vomiting after the least exertion. I was admitted to hospital at various times with these attacks as gastritis, and after rest and light diet was much better. After a short time they would recur. Since my discharge in 1919 they became more frequent—about every month—lasting, on an average, 10 days to a fortnight, until my operation was performed. Symptoms: Pain about two hours after food, which would increase until I vomited, when pain became less. This would occur three or four times a day for from 10 to 14 days. Vomit was sour and curdled and in large quantities."

I first saw the patient at the Second London Hospital in June, 1918, when I removed his appendix, having felt the stomach, duodenum, and gall-bladder from the wound and found no abnormality. X ray examination of the stomach was negative. I next saw him in June, 1921, when the frequency of his attacks and the amount of vomiting had increased, and he had wasted considerably. The frequent recurrence of symptoms threatened to spoil his life and lose him his appointment as clerk. He was therefore admitted into Guy's Hospital for further investigation. Chemical analysis showed no abnormality in the gastric function. X ray examination showed a hypotonic, very dilated stomach with delay, but no evidence of gastric or duodenal ulcer or pyloric stenosis. I concluded from this that the patient had

[1] Shown at a meeting of the Clinical Section of the Royal Society of Medicine on Nov. 11th, 1921.

partial pyloric stenosis of the spasmodic or hypertrophic variety and urged operation.

Operation (June 9th, 1921).—Thorough exploration of the abdomen revealed no abnormality except a greatly dilated and moderately hypertrophied stomach, and a greatly thickened and widened pyloric ring over which the stomach was œdematous. This œdema extended for about two inches into the pyloric antrum. I could feel no ulcer in the duodenum, stomach, or pylorus. I was able to pass my index finger through the pylorus quite easily, after invaginating the anterior wall of the stomach. The second part of the duodenum was adherent to the liver and the adhesions tended to obstruct it. I mobilised the duodenum, separated the adhesions, and performed Finney's operation, enlarging the pylorus to 3 in. in diameter. The pyloric muscle was one-third of an inch thick and over half an inch wide. The mucous membrane showed a marked fold on the lower margin of the ring. Catgut was used throughout the operation.

It is now five months since the operation. The patient has not vomited since and has put on flesh to an amazing extent. He is entirely free from pain and thoroughly enjoys his food.

Remarks.

Partial stenosis due to spasm and hypertrophy of the pyloric sphincter was described many years ago by Mr. Ernest Maylard and others. Mr. Maylard has operated in about 35 instances; I have operated in about a dozen. In many cases, as in this one, there is a marked infolding and thickening of the submucous tissue at the pylorus, partly obstructing the channel, but there is no sign of active or healed ulceration. The diagnosis is difficult, for the patient is usually quite well and the stomach normal in the interval between the attacks, which, however, become more frequent, and ultimately dilatation of the stomach replaces moderate compensatory hypertrophy. Then, or during an attack, an X ray examination reveals dilatation and delay but no sign of ulceration. The clinical history is characteristic, the patient being well while at rest and under observation in hospital, and the attacks coming on after undue exertion or fatigue.

I suggest that some form of gastro-duodenostomy is the ideal treatment of this condition, for, unlike gastro-jejunostomy, this operation carries no risk of vicious circle or jejunal ulceration, and it does not materially change the normal anatomy and physiology of the stomach. I have generally adopted Finney's method of gastro-duodenostomy, by which the pyloric sphincter is divided and the pyloric opening greatly enlarged. My results have been uniformly satisfactory.

It has been suggested that this condition is a congenital abnormality—a persistence into adult life of a congenital hypertrophic stenosis, which is at first of such a moderate degree as to be compensated by hypertrophy of the stomach muscle: later this balance is upset and the stomach gradually fails and dilates. Would Ramstedt's operation, which has been so successful in infants, be suitable for this analogous condition in adults? I think not, for the fibrous changes in the pylorus—especially in advanced cases—call for the more radical operation.

Queen Anne-street, W.

LOSS OF REFLEX TO LIGHT RESTORED IN SLEEP.

BY A. GARVIE, M.D. GLASG.

THE interesting feature of the case here described is the restoration in sleep of a normal reflex after it had been absent during waking hours for over six days.

M. I., female, aged 4½ years, was first seen March 21st, 1921. The mother stated that patient had been sick and vomiting on the previous day, and for the past 24 hours had been very sleepy. The child complained of frontal headache; temperature normal, pulse 80. Examination of nervous system revealed no abnormality. Odour of breath was slightly fruity and acetone was found in urine. No sugar or albumin present in urine. The child's previous history was good. She had suffered from scarlet fever the previous year.

On the 23rd a slight narrowing of the left palpebral fissure was noticed and lateral nystagmus. Pulse 67, temperature normal. Slight retraction of muscles at back of both legs. 24th: A paresis of the external rectus of left eye had developed, and the pupil appeared to be more sluggish to light reaction than the right. 26th: Patient was seen by Dr. G. W. Watson, of Leeds, and the possibilities of encephalitis lethargica or early tuberculous mischief were discussed. There was no evidence of any tuberculous process in any other region of the body, nor was any found up to time of death. 31st: Squint was now marked; there was some retraction of the head, and pupils were sluggish in their reaction to light.

On April 1st the patient was much more comfortable, pulse 70, temperature normal, and no acetone now present in urine. On the 8th the pupils were almost fully dilated with a very doubtful reaction to light. The paralyses of external recti were well marked. There was no headache and patient was very talkative but rational. From the 11th onwards she suffered from incontinence of urine. From the 1st to 23rd the pulse-rate had been gradually increasing to 120 per minute. Temperature had never exceeded 99° F. A little movement of the eyes could be elicited and there was a slight internal squint on right side. Pupils were almost fully dilated; there was no reaction to light and she could not see even a bright light. The frontal suture was slightly prominent and the temporal veins left side were more marked than on right. The fundi were still normal, except that on nasal side of left fundus the outline of the disc appeared to be slightly blurred.

25th: Patient was again seen by Dr. Watson, who made a detailed examination and corroborated these observations. 27th: Eyes were fixed in state of rest with pupils fully dilated. 29th: When seen about 10 P.M. patient was in a quiet sleep, and although one very rarely seeks to disturb a sleeping patient, I raised the eyelids and found that the pupils were contracted almost to the size of a pin-head, and on applying the light test I found that a normal brisk reflex was present in both eyes. As the result of applying the test the patient gradually awoke and one could observe the pupils dilating up in the process. Reaction was present until pupil was fully one-eighth inch diameter; greater than that diameter reflex was not present. As the observation was surprising I waited beside the patient for an hour and repeated the test twice as soon as it became evident that patient was sleeping again, and the same observations were made each time. 30th: There was considerable jerking of left leg. The patient was still partly conscious, but most of her conversation was limited to "Yes" and "No."

May 1st: There appeared to be some slight analgesia in second division of fifth nerve, right side. 2nd: Patient had been wakeful for two days, the mother stating that she had not slept for an hour. There was now analgesia in all areas of the fifth nerve, right side, and slight drooping of angle of mouth. There was some difficulty in swallowing and the child refused to take any solid food. When seen that night she had developed Cheyne-Stokes respiration, and she died early next morning.

During the course of the illness she was considerably troubled with constipation. I never found temperature to exceed 102° and the pulse remained rapid up to the end, being 160 on the evening preceding her death. During the illness there was said to be several slight convulsive attacks. I never saw her in one of these. A post-mortem examination was not obtained.

Remarks.

Since the brain is enclosed in the rigid cranium the volume of the blood in the cerebral vessels cannot alter unless the volume of the other cranial contents alters in the opposite sense. It appears to be a reasonable hypothesis to assume that in this case the blocking of the light reflex was due to a congestive disturbance leading to increased pressure on the third nerve. Halliburton writes:—

"Plethysmographic records from the arm of a sleeping man show a diminution in the volume of the blood every time he is disturbed, even though the disturbance may not be sufficient to awaken him. This is interpreted as meaning a diminution in the blood of the body and a corresponding increase in the blood flow through the brain."

This clinical observation seems to support the explanation placed on the plethysmographic observations: diminished volume relieving pressure when the child was asleep and gradual increase of volume as the child awakened increasing pressure on the nerve, paralysing it as manifested by the dilating pupil, and finally blocking the reflex.

Cases of this type are fortunately very rare in general practice, but it appears to be worth recording, for, if the explanation be physiological rather than pathological, it is likely to occur in the early stages of basal meningeal conditions, and may prove of value in investigating curative influence of sleep.

Halifax.

Medical Societies.

NORWICH MEDICO-CHIRURGICAL SOCIETY.

Exhibition of Cases and Specimens.

A CLINICAL meeting of this Society was held on Dec. 6th at the Norfolk and Norwich Hospital, Dr. WILLIAM WYLLYS, the President, being in the chair.

The PRESIDENT showed two cases, the first being that of a woman, aged 43, who had been quite blind from chronic secondary glaucoma for several years. The tension in the affected eye was +2, and she had external strabismus. There was considerable pain and much irritation of the other eye, not amounting, however, to sympathetic ophthalmia. The President said that he had decided to enucleate the eye, and with some diffidence, on account of the rigidity of the tissues, inserted a Mules's globe and an artificial eye. The result was most satisfactory, as after the operation the irritability of the sound eye subsided; he pointed out that the movements of the artificial eye were excellent, and the appearance from a cosmetic point of view most satisfactory.—Mr. A. J. BLAXLAND expressed some doubt as to the permanence of good results from a Mules's globe, but the PRESIDENT said that if the effect appeared to diminish he would not hesitate to insert another Mules's globe, and gave instances of cases where he had done so.

The PRESIDENT brought forward the second case for diagnosis. The patient was a girl, aged 11, in whom oblique illumination of the left eye showed a film with numerous small opaque dots scattered over it, the condition in his opinion being a persistent pupillary membrane. The patient had not noticed the defect herself, but examination by a school medical officer showed the sight in the right eye to be $\frac{6}{9}$, while that in the left was $\frac{6}{60}$. The condition was very well seen with the aid of a Collins's loop, the use of which was demonstrated.—Dr. G. MAXTED expressed the opinion that the condition was inflammatory, probably of intra-uterine origin.—The PRESIDENT said that, after hearing Dr. Maxted's view, he was disposed to agree with him.

Dr. H. J. STARLING showed two cases, the first being a case of disseminated sclerosis with coincident aortic and mitral disease in an ex-soldier about 25 years of age. The disease did not seem to be progressive, as the patient had been in the same condition for some time, but the incoördination of the hands had considerably improved. There were no tremors. Nystagmus was not marked, but increased after exertion. There was no typical scanning speech unless the man got excited. The abdominal reflexes were absent, while there were exaggerated knee-jerks and ankle clonus. Dr. Starling's second case was a man with coarctation of the aorta, who had been discharged from the army with V.D.H., and who now complained of præcordial pain and dyspnœa; he had a systolic blood pressure of 218 and a diastolic pressure of 124. No blood pressure could be obtained from the femoral circulation. The collateral circulation was carried on by various tortuous arteries, which had been outlined on the patient's body. To compare with this case Dr. Starling exhibited a specimen of the aorta, showing the lesion diagnosed in the clinical case. This latter patient had died from hæmorrhage in the brain, and the condition of the aorta was discovered post mortem. The specimen showed clearly a marked stenosis of the posterior part of the artery beyond the origin of the left subclavian, at the site of the ductus arteriosus.

Dr. F. W. BURTON-FANNING brought forward a case of diabetes insipidus in a young boy which had been completely controlled by pituitrin. The patient suffered from thirst, loss of weight, and weakness, and passed an enormous quantity of urine—100 to 150 oz. in the 24 hours, with a specific gravity of 1001–1002. After a hypodermic injection of 1 c.cm. of pituitrin the quantity of urine decreased to about 50 oz. in 24 hours, and the specific gravity rose to 1015. Pituitrin by the mouth had no effect. Altogether ten injections had now been given with the same effect every time. The condition appeared to be due to some defect of the filtering power of the kidneys, resulting in an inability to excrete a concentrated urine. There was also increased carbohydrate tolerance. The injections of pituitrin caused a rise of temperature and an increase in the secretion of urea. The question of treatment of such cases by transplanting of pituitary gland substance had been discussed, but as it would be necessary to use a human pituitary gland Dr. Burton-Fanning feared that a remedy could not be looked for in that direction.

Mr. BLAXLAND showed a case of dislocation of the hip which had occurred in a boy of 14 after a rather mild form of septic infection causing subacute epiphysitis of the upper end of the femur. Mr. Blaxland also showed: (1) a malignant papilloma of the kidney removed from a man of 35, whose only symptom was painless hæmaturia; (2) carcinoma of kidney removed from a man of 45, whose main symptom was painless hæmaturia.

Dr. MAXTED showed an unusual form of congenital syphilitic disease of the eyes in a girl of 6 years.

Mr. T. W. HANCOCK showed a specimen of early carcinoma of the pylorus before ulceration.

Dr. H. MUIR EVANS showed (1) an annular growth of transverse colon, in which resection was followed by lateral anastomosis; (2) a new growth of the ileum near the ileo-cæcal lock. Resection and an end-to-end anastomosis was performed.

BRISTOL MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on Dec. 14th, Mr. C. H. WALKER in the chair, when Prof. I. WALKER HALL gave an account of some work on

The Rôle of Dilute Acids in Infection,

carried out by him in association with Dr. A. D. FRASER. After an explanatory introduction dealing with hydrogen-ion concentration (pH), Prof. Hall proceeded to consider the means whereby the general neutrality of the body was maintained, especially with regard to the local variations of acidity in the alimentary tract, muscles, kidney, &c. He pointed out the necessary changes in pH values in local infections, and that body cells demanded an environment containing between 0·000,001 and 0·000,000,01 g. of hydrogen ions per litre if a satisfactory response to infection was to be made. As, however, this condition might be reached by a mixture of tissue acids such as lactic, phosphoric, sulphuric, and carbonic, Prof. Walker Hall considered in detail the effect of these and other acids possessing a low dissociation constant, especially with regard to the action of the undissociated portions. He showed that not only were red and white corpuscles extremely sensitive to the minute pH changes associated with the very dilute quantities of acid in the blood, but that they had to meet less balanced conditions in the lymph where "buffer" action was less complete. He then related the results of his experiments on the growth of bacteria treated with quantities of acid equivalent to those obtaining in the tissues, and demonstrated the catalytic action of the H ions on the one hand and the retarding influence of the undissociated portions on the other. By the application of these observations Prof. Hall said he had been able to improve materially the technique of blood cultures, and the diagnosis of diphtherial infection. He also alluded to the restraining effect of the monobasic fatty acids on the growth and alkalinity production of diphtheria bacilli, and expressed the hope that his findings would lead to better prophylaxis and decrease in "carriers." The period required for the diagnosis of tubercle and the virulence of micro-organisms had been altered by changing the pH of cellular

surroundings. Prof. Hall referred to recent work on the permeability and penetrability of various organic and mineral acids, which supported his view that much would be gained by the application of pH determinations to body fluids such as gastric, pleuritic, ascitic, and urinary fluids. It seemed probable that delayed alimentary and other functions, as well as defective absorption of exudates, would prove in large part due to an alteration in permeability on the one hand and hydrogen-ion concentration on the other, and that further work might reveal some means whereby this latter could be influenced favourably.

Dr. H. H. CARLETON read a paper on a Physiological Conception of Prolonged Hysterical Conditions.

Reviews and Notices of Books.

HEART DISEASE AND PREGNANCY.

By Sir JAMES MACKENZIE, M.D., F.R.C.P., LL.D. Edin. and Aberd., F.R.S. Director of the Institute for Clinical Research, St. Andrews. London: Oxford Medical Publications. 1921. Pp. 138. 8s. 6d.

As Sir James Mackenzie rightly but severely remarks, advances in cardiology are not incorporated in books on midwifery, and many obstetric writers have not taken the trouble to familiarise themselves with modern views on this branch of medicine. Thus the text-book teaching of the treatment of pregnant women suffering from heart disease is sketchy and quite unhelpful. Some chapters of this monograph have already appeared in substance in our columns, and the whole gives a clear outline of a difficult subject.

After pointing out the normal sequence of events during pregnancy in the circulating mechanism, Sir James Mackenzie devotes successive chapters to the changes in the diseased heart during pregnancy, the physiology of the heart in relation to its efficiency, the law of heart failure and of heart murmurs, with special reference to prevalent misconceptions regarding the import of these signs. He then proceeds to discuss in detail the various forms of heart disease and their relationship to pregnancy and labour; this section includes also consideration of irregular action of the heart, auricular fibrillation, the neurotic heart, congenital defects, and finally the management of cases of pregnancy complicated with heart disease. Stress is laid upon the need for recognition of the earliest symptoms of heart disease—namely, breathlessness in effort and palpitation. The presence in mitral stenosis of a diastolic as well as of a presystolic murmur, accompanying enlargement of the heart and distress on effort, indicates, in the author's view, damage to the heart muscle, and he lays down the rule that if auricular fibrillation is present pregnancy should be forbidden. In cases of aortic regurgitation, when the heart is normal in size and response to effort is good, pregnancy may be allowed, but if the heart is enlarged and there is a water-hammer pulse, the organ is probably permanently impaired and bearing a child will cripple the patient severely, even if she gets over her confinement.

This book has been written with the definite aim of directing the attention of those who conduct labours to the newer cardiology: it should prove of the utmost value to them and to obstetric teachers.

HEREDITY.

Vorlesungen über allgemeine Konstitutions- und Vererbungslehre, für Studierende und Ärzte. By Dr. JULIUS BAUER. Berlin: Julius Springer. 1921. Pp. 186.

THIS is a series of 12 lectures, of which the first six deal with the principles of heredity and variation, with numerous examples illustrating individual variation, mutation, and Galton and Mendel's theories. These make somewhat laborious reading on account of the statistical and mathematical material introduced. In the seventh lecture is given a list of the diseases and abnormal conditions in man recognised to follow Mendelian heredity. They are arranged according as they appear to be dominants or recessives, and form a lengthy but interesting table. Later lectures are more clinical in character, and deal with such matters as the "individual ductless gland formula," and the types which result from failure in the perfect interaction of the various internal secretions. Thus descriptions of the hypopituitary and hypothyroid dwarfs, and of the hyperpituitary giants are given; also an account of Sigaud's classification of man into the respiratory, digestive, muscular, and cerebral types. Various other clinical classifications of human types are discussed and illustrated by photographs. The concluding lectures treat of racial and sociological matters. This is a compilation of lectures, each of which was probably of interest to those attending, but the book contains little new matter.

SURGERY OF PERIPHERAL NERVE INJURIES OF WARFARE.

By HARRY PLATT, M.S. Lond., F.R.C.S. Eng., Hon. Surgeon, Ancoats Hospital, Manchester. Bristol: John Wright and Sons. 1921. Pp. 49. 4s.

THIS little monograph is a reprint of the Hunterian lectures delivered by Mr. Platt at the Royal College of Surgeons of England, and thereafter printed in the *British Journal of Surgery* and abstracted in THE LANCET.[1] Surgeons had long been waiting for an authoritative and judicial review of the various operations designed for the repair of injured nerves, and Mr. Platt has made an excellent contribution to surgical knowledge which will tend to stabilise judgment and technique.

LABORATORY MANUAL IN GENERAL MICROBIOLOGY.

Second edition. Edited by WARD GILTNER. Prepared by the Laboratory of Bacteriology and Hygiene, Michigan Agricultural College. London: Chapman and Hall; New York: John Wiley and Sons. 1921. Pp. 472. 21s.

THE dominant notes of the book are its intensely practical character and its comprehensive subject-matter. Its existence illustrates the extent to which bacteriology is studied in a number of American schools as a separate and complete science and not—as is, unfortunately, usual in this country—as a medical subject, a mere branch of pathology. The book aims at covering the whole field of bacteriology, not equally but without undue emphasis on any one branch. The first 149 pages deal in a series of practical exercises with general morphological and cultural methods and include, in addition to the usual practical exercises on sterilisation, media preparation, routine cultivation and staining methods, exercises dealing with the special properties of yeasts, moulds, and the demonstration of bacteria under natural conditions. The second part of the volume deals with the physiology of micro-organisms in 67 pages, and in a series of well-thought-out exercises demonstrates the very numerous physiological properties of bacteria. This part of bacteriology is inadequately dealt with in most laboratory handbooks and constitutes a valuable section of this book. Applied microbiology is given only 125 pages, 74 of these being taken up by the bacteriology of air, water, sewage, soil, and the dairy, 4 by plant microbiology, and 47 by animal diseases and immunity. Much useful information is given in an appendix of 93 pages.

The subject of animal diseases and immunity is inadequately treated and the book would be useless as a manual for the medical student; for example, the bacteria of tuberculosis and diphtheria are not described. The sections on applied microbiology are the weakest in the book. There is no account of the bacteriology of food apart from dairy produce, and

[1] THE LANCET, 1921, i., 789.

the bacteriological examination of water is dismissed in six pages. Although the isolation of *Bacillus coli* is described, streptococci and *B. welchii* are not mentioned.

Dr. Giltner states that his aim has been to make the book a guide to general microbiology, leaving the particular fields of dairy, soil, water, medical, and other phases of bacteriology to special manuals. It is reliable and, on the whole, up to date; the newer methods for cultivating anaerobes used in this country are, however, omitted. A good account of hydrogen-ion concentration methods is given in the appendix.

Within its self-imposed limits the book is a valuable one. The student who has conscientiously worked through it will be equipped with a knowledge of bacteriological technique and should be well prepared to utilise his training in any special field he may select.

CARDIAC DISEASE.

Original Observations and Theories on Cardiac Disease and the Normal Heart. With a Note on Alcohol. By MICHAEL B. SHIPSEY, M.B., B.Ch. Birm. Birmingham: Cornish Brothers, Ltd. Pp. 40. 1*s.* 3*d.*

THE author of this brochure has attempted the impossible. In the space of 36 small pages, subdivided into 21 sections, he flouts many of the theories and principles accepted by the majority of modern physiologists, physicians, and cardiologists, substituting original and, in some cases, quite ingenious theories of his own. But, doubtless owing to lack of space, he does not attempt to supply proofs of these theories. Dr. Shipsey's views on the mechanical aid rendered by the respiratory system are quite reasonable. It is on the question of the function of the myocardium in health or disease that his views are so unusual, most of them being far from conclusive, especially in the light of recent experimental research. The fact that Dr. Shipsey "believes that he can hear the ventricles contract about a fiftieth part of their full extent" leads one to suppose that either he must have abnormally acute sense of hearing or that he brings a powerful imagination to bear upon his cases during examination. Slight changes in the character of the heart sounds appear to mean more to him than to the average medical man. Dr. Shipsey discusses diagnosis, prognosis, and treatment, including the value of alcohol in heart cases, on broad lines, and rightly emphasises the psychological factor in such cases. But while his book may stimulate free scientific thought, it cannot be considered as likely to be of great value to medical practitioners as a whole.

Les Nouvelles Méthodes d'Examen du Cœur en Clinique. Par R. LUTEMBACHER. Paris: Masson et Cie. 1921. With 138 illustrations. Pp. 186. Fr.20.

IN this short but most interesting volume Mr. Lutembacher has demonstrated clearly how much our knowledge of cardiology has been augmented by methods other than those employed in ordinary clinical examination. His book is divided into two parts, in the first of which, after a brief description of different types of polygraphs and of the results attained by their use, he describes and illustrates the various abnormalities which may occur in the myocardium during any period of its intricate cycle. The cardiographic records are so good that for anyone accustomed to reading cardiograms there is hardly a need to refer to the text in this section. The uninitiated will find the descriptions of the different forms of cardiac abnormality so clear that they will find no difficulty in following the argument. The chapter on electrocardiography, owing to its extreme brevity, shows up in rather marked contrast to the sections dealing with the polygraph. We would welcome a further publication by Mr. Lutembacher dealing with the subject more especially from the electrocardiographic standpoint.

In the second part of the book an attempt is made to show what valuable additional knowledge may be provided by radioscopy. In place of the actual radiograms the author substitutes diagrams of the outline of the heart and great vessels, and in each case a photograph of the external appearance of the heart is placed side by side with the radiographic outline. He is careful to emphasise the fact that radioscopy should not take the place of other methods of examination, but he shows how helpful it may sometimes be in certain forms of disease of the heart and the great vessels. Although it is usually impossible for the general medical practitioner to carry out such work himself, he should be acquainted with at least the more common forms of cardiographic and radiographic records, for it is becoming evident that a thorough and exhaustive investigation of the cardiovascular system can be completed only after combined clinical and graphic examinations have been carried out. Mr. Lutembacher in no way belittles the value of clinical examination; in fact he shows how several types of arrhythmia can be diagnosed by clinical methods alone. On the other hand, he is able to prove beyond doubt that some of the abnormalities of excitability or conductivity of the heart muscle, though they give similar clinical signs, produce cardiographic records which are quite dissimilar in character, and which can be interpreted correctly only after careful measurement of the waves, as they appear in the arterial and venous tracings. The book will appeal to all working at diseases and disorders of the heart.

FASTING AND MAN'S CORRECT DIET.

By R. B. PEARSON. Chicago, Illinois: Published by the Author. 1921. Pp. 153.

WE do not quarrel with Mr. Pearson's main views on fasting, although fasting is not a panacea, but remarks such as the following should only be made by one who is secure himself from the charge of gross ignorance: "In the writer's opinion it is utterly astonishing that the so-called 'Regular' school of allopathic physicians, as represented by the American Medical Association, should be so profoundly ignorant of the laws of Nature with which they have to deal as they are at present." There is no body of men more profoundly conscious of their own limitations than medical men, and the more skilled and cultivated they are the more they feel how little they know. But it ill becomes a writer who shows such abysmal ignorance as Mr. Pearson often does to carp at other men's ignorance. Mr. Pearson thinks that "germs are scavengers, that they never caused any disease whatever"; he believes that both putrefaction and fermentation are purely chemical actions and not caused by any germ or minute organism; and he makes the following remark after talking about the sterilised culture media used in bacteriology: "Why not try keeping a few 'preparations' at this temperature *without inoculation with bacteria*, and see if they don't decompose just as fast and produce just as much 'toxin' material as the preparations inoculated with bacteria?" If Mr. Pearson had the slightest acquaintance with the subject he would know that this experiment has been tried over and over again, always with the result that the sterile "preparations" do not decompose.

We are not surprised to see that the author is his own publisher.

PHARMACOLOGY AND TOXICOLOGY.

Materia Medica and Therapeutics. An Introduction to the Rational Treatment of Disease. Twelfth edition, revised. By J. MITCHELL BRUCE, C.V.O., M.D., F.R.C.P., Consulting Physician to Charing Cross Hospital; and WALTER J. DILLING, M.B., Lecturer in Pharmacology, Liverpool University. London: Cassell and Co., Ltd. 1921. Pp. 678. 10*s.* 6*d.*

A BOOK which has run through 12 new editions and a still larger number of reprints in 38 years has been judged by a higher criticism than can be given in any review. For such a long life the original material must be good, but so must also be the

judgment which absorbs the new and discards the old, not only the old which is proved wrong, but that which has become unimportant. New subjects in this edition are accessory food factors, detoxicated vaccines, delayed chloroform poisoning; new drugs are benzyl benzoate and ethanesal; new sections include natural mineral waters and baths, invalid diet, and a short account of the Dangerous Drugs Act. These last sections are useful in a book which has become a concise encyclopædia of the subjects of pharmacology and therapeutics as they concern the student and the young practitioner.

One of the great difficulties in writing a book for the student on materia medica, pharmacology, and therapeutics is the fact that at the time when he learns pharmacology and materia medica he is only just beginning to be initiated into medicine, and since he has no knowledge of disease treatment means nothing to him. The authors provide 52 pages of introductory material, followed by about 400 pages on materia medica, wherein the drugs are described with enough pharmacology and therapeutics to ensure comprehension. In the third part, under the name of general therapeutics, organs and systems of the body are discussed, with the diseases of each and their treatment. A definite scheme runs through each chapter of this section, wherein physiology, pharmacology, pathological relations, spontaneous prevention and recovery, and finally therapeutics are dealt with in turn. This enables the reader either to work straight through each system of the body, or to pick out without difficulty the pharmacology or the therapeutics, ignoring the rest.

The fact that throughout the book the doses of the metric system are given before those of the imperial measures may seem a small point, but it goes some way to help us over the change we must face in the future. In the external preparations percentage is strictly adhered to; it will not be so difficult to introduce the metric system for ointments as for internal remedies, and a beginning may well be made in this section. Simple prescriptions in the metric system, such as that given on p. 51, are useful in this connexion. Altogether the work is excellent; few books contain so much useful information in similar space, and at such a reasonable price.

Taschenbuch der Ökonomischen u. Rationellen Rezeptur. By A. FRÖHLICH and R. WASICKY, of Vienna. Berlin and Vienna: Urban und Schwarzenberg. 1921. Pp. 215. M.30.

THE war has indeed left many scars. This small book for German and Austrian doctors is devoted to pointing out how drugs which are unprocurable or very expensive may be avoided. It is an emergency pharmacopœia, dealing not only with drugs, but even with the prices of pots and glasses. The book is essentially of local and temporary value, but nevertheless contains much useful information.

What to do in Cases of Poisoning. Twelfth edition. By WILLIAM MURRELL, M.D., F.R.C.P. Revised by P. HAMILL, M.D., F.R.C.P., Lecturer on Pharmacology and Therapeutics, St. Bartholomew's Hospital. London: H. K. Lewis and Co., Ltd. 1921. Pp. 273. 4*s.* 6*d.*

WE are glad that Dr. Hamill has not materially changed the type of Murrell's well-known little book. The title so well expresses the scope of the book and the size and contents are so suitable for its purpose that alterations of its general form could only be deplored. The changes which have been made have been chiefly abbreviations and the replacement of any irrelevant matter by an account of a few new poisons and notes on treatment. Dr. Hamill has shortened rather than lengthened the book, and has made it even more practical than it was. In view of the present peace, and in the hope that it may continue, he has not included symptoms and treatment of war poisonings. One might suggest that any proprietary preparations that are worth mentioning in the text are also worth recording in the index. Many of the patent preparations on p. 25 and the following pages may give rise to poisoning, and the fact that their composition is stated would be missed by the practitioner referring to the manual in a case of emergency.

In a future edition it might be worth while to explain how the india-rubber bottle mentioned on p. 34 is used to fill the tube, and how iodide of starch (p. 37) is prepared. Though santonin poisoning may occur mainly in children, the use of the drug as a vermifuge is, we believe, equally common in adults. The obsolete tincture of jaborandi might disappear from p. 83, and the dose of diamorphine given on p. 139 is not strictly pharmacopœial. The symptoms of arsine poisoning are worthy of mention. They are different from symptoms caused by arsenic taken in other ways, while this form of poisoning is found to be commoner than had been previously thought, at any rate in industrial districts. But these are minor matters in a book so sound and practical.

The manual, written primarily for the doctor, is a safe and useful one in the hands of the nurse and of the layman; it may save life by giving the latter some hints how to act in emergencies, while it will not lead him to neglect to send for more skilled aid.

New Inventions.

A NEW URETHROSCOPE TUBE FOR THE POSTERIOR URETHRA.

I HAVE lately had made to fit the "Holborn" urethroscope a special tube by means of which a very clear view of the floor of the posterior urethra can be obtained. The urethral tube here illustrated is rather

more than 7½ in. long and of 26 French catheter gauge. It is curved at the end and has an opening 1¼ in. long in the convex surface of the bend. This opening is completely filled by the pilot when introducing the tube, and I find it causes very little bleeding or discomfort to the patient. The tube is made to fit the body of the urethroscope, and lengthening pieces are supplied for the lamp holder and instruments to make up for the extra length of the posterior tube. The lens used is a large single one, ¾ in. in diameter, and does not require any adjusting or focussing, such as is necessary with more complicated and expensive instruments. The tube can also be used with the operating body, thus enabling the surgeon to carry out in the posterior urethra any necessary treatment as easily and with just as good an illumination as in the anterior urethra. It is advisable to give the patient a ¼ gr. belladonna suppository the night before and another an hour before the examination, and to wash out the bladder with oxycyanide of mercury afterwards. A local anæsthetic is rarely necessary. After the patient has passed water the tube is introduced as if it were a sound, and the pilot removed. The mucous membrane is then dried with mounted swabs and the body of the instrument attached. A little care and practice is necessary to prevent the window being pressed on to the mucous membrane. By gently withdrawing the tube and rocking from side to side, the walls and floor of the posterior urethra can be examined.

The instrument has been made for me by the Holborn Surgical Instrument Co., Thavies Inn, E.C.

F. CARMINOW DOBLE,
Military Hospital, Rochester Row. Temp. Capt., R.A.M.C.

THE LANCET.

LONDON: SATURDAY, DECEMBER 31, 1921.

1921.

TIME was, and not so long ago, when we attempted in the last issue of the year to summarise its medical events; and long after such an annual résumé could be otherwise than capricious in character, we were informed by our readers that, within its limits, they found it of service. It supplied them with milestones along the road. But even this much can no longer be done by any compendium of medical history treating of the happenings of a year, and within the scope of a weekly newspaper's production. The fact that nothing approaching the old-fashioned "Annus Medicus," however deliberately restricted in circumference, can possibly represent the annual progress of medicine, is a practical testimony to the extent and range of that progress.

But this much can be said of the medical year just closed, and it is of great significance. While 1921 has been marked by no great discovery and by no fundamental change in professional organisation, all the medical activities of the year have revealed a general recognition of the unity of medicine in the largest sense. To insist upon this unity—to point out that the clinician, general and special, the pathologist, in mortuary or laboratory, the practitioner, at home or abroad, and working as individual or public servant, have a common object and interdependent aims—all this has been wont to form the text of introductory addresses and of writers on sociology. That much can now be taken for granted. Steadily, throughout the year just dead, the truth that medicine is one, one and undivided, though its practice be followed under such widely different conditions, has become patent to everyone. The necessity for close coöperation between clinical and laboratory work is seen to entail the necessity that facilities should be provided whereby practitioners should be able to obtain assistance in their common task from those who are able to give special advice. Departments there must be, but they should not be water-tight. On the contrary, the freest communication is required between them in order that the collated knowledge and experience represented by each and all may be at the disposal of a public which is to-day fully aware of the debt owed to our science.

Renal Function Tests.

THE subject of renal function has assumed considerable importance in recent years, and much of the interest aroused is due to the labours of those biochemists who have devised simple yet accurate methods of blood and urine analysis. Not only have these methods proved of value in experimental investigations on animals, but the use of microchemical methods has enabled practically all of them to be applied to man. The advances made have shed a new light upon the subject of biochemical changes in health and disease. Although at the moment it cannot be said that the tests for renal function have approached the ideal, the fact that they have already been found of great value is proved by the eagerness with which both physician and surgeon seek help from them in diagnosis and prognosis of renal insufficiency. A group of American workers have attacked the problems with remarkable success; and the names of FOLIN, DENIS, VAN SLYKE, MYERS, ROWNTREE, GERAGHTY, FITZ, and FINE stand out prominently in this connexion. Many observations on experimental pathology have been made, especially by SCHLAYER, and his co-workers at Tübingen. From France comes the work of AMBARD crystallised in the laws and coefficient which bear his name. Our own country has also contributed valuable work to this particular branch of applied biochemistry. The potassium-iodide test was first devised by DUCKWORTH as far back as 1867. In more recent times D. CORBETT, MACKENZIE WALLIS, MACLEAN, and DE WESSELOW, among others, have placed certain renal function tests on a fairly firm and satisfactory basis. The simple and excellent urea-concentration test devised by MACLEAN and DE WESSELOW may be mentioned as of particular value.

To enumerate all the various tests which have been devised for determining kidney function would be unprofitable. Many of the tests have now become of historical interest only, whilst others which should be obsolete are employed by certain workers mainly on account of simplicity and perhaps through habit. The chief difficulty which has to be faced by a physician anxious to ascertain the exact nature of the pathological lesion in a kidney is the provision of a far larger amount of renal epithelium than is actually required for every-day needs, and thus renal function tests do not differentiate minute disturbances of function. The tests do, however, enable the physician to define the state of the kidneys in acute and chronic nephritis, functional albuminuria, arterio-sclerosis, uræmia, and myocardial degeneration, and are of particular value in the differentiation of cases of uræmia from cerebral hæmorrhage and other diseases which may simulate the former. In Prof. H. MACLEAN'S recently published monograph,[1] intended and admirably adapted for the use of the general practitioner, he emphasises the value especially of the estimation of the blood-urea content, the urea-concentration test in the urine, and the diastase content of the urine, as simple tests which appear to give information of as much value to the physician in most cases as do more complicated ones. Dr. JOHN D. COMRIE has described in our columns[2] experiences with certain renal efficiency tests—viz., the phenol-sulphone-phthalein test, the urea-concentration test in the urine and the urea content of the blood, and concludes that these tests supply reliable information. He is in agreement with many American workers in placing most reliance on the phenol-sulphone-phthalein test, both as regards reliability and also for its individual worth in diagnosis. This test has, however, not found general favour in this country. The investigation of "trench nephritis" gave opportunities for much valuable research to Dr. LANGDON BROWN, Dr. MACKENZIE WALLIS, Dr. ABERCROMBIE, and Prof. MACLEAN. The last carried out a most extensive investigation and elaborated a simple scheme of testing the renal efficiency of soldiers who had suffered from this disease. The value of this test is well known, and the collected data based on investigations of over 14,000 cases are sufficient to show its wide range of application. In the monograph previously referred to Prof. MACLEAN deliberately refrains from elaborate theoretical discussions accompanied by extensive

[1] Modern Methods in the Diagnosis and Treatment of Renal Disease. By Hugh Maclean, M.D., D.Sc., Professor of Medicine, University of London, and Director of the Medical Clinic, St. Thomas's Hospital. London: Constable and Co. 1921. Pp. 102. 8s. 6d.

[2] THE LANCET, Dec. 3rd, p. 1150

bibliographies; but his assurance that he has included only those tests found after trial on a large scale to be of practical clinical value and to be easily carried out can be accepted without question. Incidentally, his views on the dietetic treatment of nephritis alone, adequately summarised in one chapter, deserve careful study. Practitioners will be interested in the unexplained but decided relief from dropsical symptoms in certain cases of parenchymatous nephritis when placed on a high protein diet, a phenomenon first observed by EPSTEIN, and substantiated by Prof. MACLEAN; the oral administration of urea has also been found of value in selected cases. On the importance of ascertaining the state of the kidneys in certain surgical conditions Prof. MACLEAN has also some wise words to say.

As to the utility of renal function tests in surgical conditions they were originally introduced for the special purpose of helping the surgeon and they are also of importance to the surgeon in assessing operative risks. The latest discussion[3] which took place in the Section of Urology of the Royal Society of Medicine was confined to the surgical aspect of these tests; surgeons and pathologists spoke of the results they had obtained in the application of certain tests to cases of prostatitis, and unilateral and bilateral disease of the kidneys. The general consensus of opinion was that renal function tests were of value in cases of prostatitis, where there was no definite clinical evidence of renal insufficiency, but when the surgeon was doubtful whether prostatectomy should be carried out in one stage or by the two-stage operation. In cases where there was clinical evidence of considerable renal damage, the tests could be used to confirm the findings, and if positive the surgeon would refrain from operative interference. The chief tests used by most of the speakers were the urea content of the blood and the urea-concentration test. For genito-urinary diseases, associated with obstruction in the lower part of the urinary tract, the tests of choice appeared from the discussion to be those advocated by Prof. MACLEAN—the urea content of the blood, the urea-concentration test of the urine, and the urinary diastase content. In unilateral or bilateral diseases of the kidney ureteral catheterisation was generally advocated, combined with these tests. For convenience and rapidity the indigo-carmine test appeared to be in favour with some surgeons. The discussion clearly emphasised the necessity of careful clinical investigation of every case, and the importance of coöperation between the clinician and the pathologist. Renal function tests by themselves will not answer the question when to operate and when not to operate; neither can they predict the onset of an ascending infection of the kidneys. For the present, at least, the tests should be assessed by one who has had experience in their application and interpretation. But we reiterate here the hope, expressed in reviewing a little French book entitled "Comment interpréter en clinique les réponses du laboratoire?," that improvements in medical education will soon make such limitation obsolete.

The General Practitioner and Public Health.

THE relationship between the public health services and the general practitioner has of late years become the subject of much consideration. The general practitioner must always be the executive officer in any scheme of medicine; in the first annual medical report of the Chief Medical Officer of the Ministry of Health, Sir GEORGE NEWMAN made it clear that the practitioner should be not so much an agent for the treatment of obvious disease as an agent for discovery and arrest of disease in its early stages, and a missionary of personal hygiene in its preventive aspect.

A recent contribution to the subject was made by Dr. C. E. S. FLEMMING, a member of the Consultative Council of Medical and Allied Services, in an address delivered at Winsley before the West of England Branch of the Society of Medical Officers of Health. Nothing, said Dr. FLEMMING, has more hindered the development of the medical services than the want of association of the various sections of medicine—a want resulting partly from the individuality of the medical practitioner, but partly also from the prevailing lack of appreciation of the fact that the interest of the individual is also the interest of the community. When public health authorities undertook not only supervision of drainage, water-supply, and housing, but also notification, isolation, and treatment of cases of infectious diseases, their officers came into close contact with the family doctor, and friction sometimes resulted when part-time medical officers combined private practice with official work; but both sides now realise their interdependence. Apart from administration, it is hard to say where separate spheres begin for preventive and curative medicine. If a public health service is to be truly preventive it must consider and possibly control the environment of the people at home and at work, together with their food-supply and all preventable conditions which cause disability, besides participating in constant research. Dr. FLEMMING pointed out that every doctor in this sense must be a member of the public health service, and no official could ever have the same intimate knowledge of the patient's life-history, the same opportunity of detecting disease in its earliest stage, as the practitioner possesses. A communal clinic would be the place where the general practitioner and the medical officer could meet; at such a clinic the patient would require not only expert special opinion, but expert general opinion, and if the communal clinic were run on practical lines the practitioner's value to the community would be much enhanced. He should be able to follow up those cases with which he could not properly deal in his consulting-room or in the patient's home—follow them through to clinic or hospital. There are general difficulties of organisation, as well as many difficulties of detail, to be surmounted before the alliance of practitioner, specialist, and administrator can be made complete. Every student of the Dawson Report knows this. The practitioner is rightly jealous of his professional independence, and in indiscriminate consultation there lies a danger of loss of individual responsibility, as Dr. FLEMMING points out; but with his conclusion that the complexity of society renders necessary an intimate and hearty coöperation between all departments of medicine everyone will agree.

No point made by Dr. FLEMMING calls for more attention than his insistence upon the necessity for the following-up of patients by the medical practitioner who, with a knowledge of the personal and family histories, sends them to clinics or to hospitals, too often to lose sight of them entirely. In this way evidence of late results of treatment is lost—evidence which would, if collected and collated, be of the utmost value in the establishment and regulation of many treatments which now form the subjects of discussion. In several American hospitals, and at the London Hospital, experiments in some such direction as we have outlined have been successful, and it is clear that in following-up lies a development of the work of a practitioner most vital for the advancement of public health.

[3] THE LANCET, Dec. 3rd, p. 1161.

Annotations.

"Ne quid nimis."

THE STUDY OF DEEP X RAY THERAPY.

MORE than a year ago Dr. Reginald Morton related[1] to the Section of Electro-Therapeutics of the Royal Society of Medicine his impressions of deep X ray therapy gained during a visit to the Frauenklinik at Erlangen. After a week's study of the methods there employed he came away with the conviction that the apparatus and technique constituted a real advance in radiology. Admittedly no new principle was involved, but a greater degree of penetration and intensity was attained at Erlangen than elsewhere, and the results already shown in cases of uterine carcinoma, apart from surgical intervention, were, to say the least, very encouraging. A latent period of scepticism was followed by an increasing rush to the scene of action, with the amusing result that the admission thereto has been strictly rationed. The *British Medical Journal* of Dec. 3rd recounted the difficulties of Dr. Nordentoft, of Copenhagen, in getting to Erlangen. The fact is, and we have it from Prof. Wintz himself, that the work of the radio-therapeutic department has been seriously embarrassed by the attention given to it. Prof. Wintz is desirous of restricting the visitation to a post-graduate course to be held in the early part of next year. Those who intend to take part in it should not only possess a competent knowledge of the German language, but they would be wise to master a book[2] written by Dr. F. Voltz when he was head of the experimental laboratory attached to the radio-therapeutic department at Erlangen. It is a complete exposition of our knowledge of the character of X rays, their chemical and physical properties, and of methods for measuring their wave-length, their penetrating power through various substances, and their quantity in arbitrary units. Not only are these matters described in great detail, with a wealth of numerical tables and diagrams, but the secondary phenomena attending the passage of a beam of X rays through matter are also fully dealt with. The scattering of the primary beam, the excitation of secondary radiation, and the selective absorption have each to be taken into account in an attempt at estimating what the intensity of radiation at any particular point may be.

Dr. Voltz states that the main object of his book is to provide data from which the radiologist may estimate dosage. The treatment adopted is rigidly physical; mathematical formulæ are freely distributed throughout its pages and make its study exhilarating if difficult. The experimental plan of the work actually forms the basis from which the quantitative methods of measurement used in the Erlangen clinic have sprung. It has been felt for many years by radiologists that the means at their disposal for the accurate measurement of doses were scanty. The electrical method described here, which is based upon the principle of the first inoto-quantimeter of Szillard, has been much developed by German physicists in the last few years, and it seems likely enough that this instrument, or some variation of it, will become extensively employed by radiologists. Its use alone will not give them all the information they want, but the fundamental principles upon which it is based will necessarily become better known, and medical men will become more familiar with physical quantities and expressions of which at present they are rather shy.

[1] THE LANCET, 1921, i., 24, 37.

[2] Die Physikalischen und Technischen Grundlagen der Messung und Dosierung der Röntgenstrahlen. By Dr. Friedrich Voltz, Physikalischer Assistent der Strahlenabteilung der Universitäts-frauenklinik Munchen. Berlin: Urban und Schwarzenberg. 1921. Pp. 300. M.96.

MAURITIUS.

MAURITIUS defaults from the standard of the sanitary reformer, despite the fact that the island has been a Crown colony for over 100 years. Such was the inevitable conclusion to be drawn from the graphic account given by Dr. Andrew Balfour to the Royal Society of Tropical Medicine and Hygiene of a recent visit to the island, undertaken at the instance of the Colonial Office and with the object of reporting on the sanitary conditions which had been seriously complained of by the Governor, Sir Hesketh Bell. Up to the middle of last century Mauritius appears to have been a peculiarly pleasant place to live in. Its scenery affords as much variety as can be hoped for in an island rather smaller than the county of Surrey; its climate is mild and equable, even delightful between May and December, and though periodically prolonged heavy rains and destructive hurricanes occur, the porous volcanic soil dries rapidly. But since 1854, when a visitation of cholera swept away 17,000 of the inhabitants, Mauritius has been under the scourge of disease. In 1865 the chance call of a ship at Port Louis from the malarious African coast introduced the *Anopheles costalis*, and the deforestation then in progress, to make room for the sugar cane, had undoubtedly prepared a way for the outbreak of malaria which decimated the island in 1867 and 1868; 31,800 of the population succumbed to this epidemic. Endemic malaria still claims 3000 to 4000 victims every year. Antimalarial measures on a large scale have been attempted, and in many parts of the island canalisation of streams has been carried out or begun as the result of Major Ronald Ross's survey and classic report in 1908. Unfortunately, however, his recommendations were only imperfectly put into effect, despite subsequent efforts by local health officers.

Dr. Balfour found pools in the streets arising from defects in the water pipes, from overflow wastage or drainage from pools in the vegetable gardens; he found stagnant water collecting in waste tins, graveyard urns, and hollow shells of the large edible snail. From all these sources larvæ of *A. costalis* were obtained. The irrigation of extensive sugar plantations, the overflows from unchannelled streams, the reed-grown banks of streams and rivers, and the marine swamps also afforded sufficient evidence of mosquito-breeding haunts to account for the general prevalence of endemic malaria. On the other hand, certain areas are free from the pest, as the result of proper canalisation and clearing of growth of river margins, and here streams are so shaded that the spread of a water weed inimical to mosquito larvæ is allowed full scope. Apart from malaria, the other principal causes of death in Mauritius are pulmonary tuberculosis, dysentery, bronchitis, and pneumonia. The death-rate of children under the age of 5 years in 1918 was over 300 per 1000 births. For the spread of dysentery and enteric fever the shallow wells, with every chance of contamination from the surface which form the water-supply in many parts of the island, are mainly responsible. Moreover, the insanitary conditions of the towns and the primitive methods used for the carriage and disposal of excreta, call for the most active measures of reform throughout the island. In the market places flies reign supreme; dogs have free run of the garbage and refuse heaps, the most elementary precautions being neglected. In the outskirts, pigs in large numbers roam at will, even wallowing in the open sewage pits through the broken-down barriers. It is not surprising, therefore, that among other intestinal disorders helminthic disease, especially ankylostomiasis, is common. Although the health report for 1918 states that a new leper colony was being erected a few miles out of Port Louis, the old leper hospital, condemned as long ago as 1878, was still in use on the outskirts of the town at the time of Dr. Balfour's recent visit. The sale and distribution of hand brooms made by the lepers is doubtless responsible for the spread of the disease, which, in Dr. Balfour's opinion, is more prevalent than is

bibliographies; but his assurance that he has included only those tests found after trial on a large scale to be of practical clinical value and to be easily carried out can be accepted without question. Incidentally, his views on the dietetic treatment of nephritis alone, adequately summarised in one chapter, deserve careful study. Practitioners will be interested in the unexplained but decided relief from dropsical symptoms in certain cases of parenchymatous nephritis when placed on a high protein diet, a phenomenon first observed by EPSTEIN, and substantiated by Prof. MACLEAN; the oral administration of urea has also been found of value in selected cases. On the importance of ascertaining the state of the kidneys in certain surgical conditions Prof. MACLEAN has also some wise words to say.

As to the utility of renal function tests in surgical conditions they were originally introduced for the special purpose of helping the surgeon and they are also of importance to the surgeon in assessing operative risks. The latest discussion[3] which took place in the Section of Urology of the Royal Society of Medicine was confined to the surgical aspect of these tests; surgeons and pathologists spoke of the results they had obtained in the application of certain tests to cases of prostatitis, and unilateral and bilateral disease of the kidneys. The general consensus of opinion was that renal function tests were of value in cases of prostatitis, where there was no definite clinical evidence of renal insufficiency, but when the surgeon was doubtful whether prostatectomy should be carried out in one stage or by the two-stage operation. In cases where there was clinical evidence of considerable renal damage, the tests could be used to confirm the findings, and if positive the surgeon would refrain from operative interference. The chief tests used by most of the speakers were the urea content of the blood and the urea-concentration test. For genito-urinary diseases, associated with obstruction in the lower part of the urinary tract, the tests of choice appeared from the discussion to be those advocated by Prof. MACLEAN—the urea content of the blood, the urea-concentration test of the urine, and the urinary diastase content. In unilateral or bilateral diseases of the kidney ureteral catheterisation was generally advocated, combined with these tests. For convenience and rapidity the indigo-carmine test appeared to be in favour with some surgeons. The discussion clearly emphasised the necessity of careful clinical investigation of every case, and the importance of coöperation between the clinician and the pathologist. Renal function tests by themselves will not answer the question when to operate and when not to operate; neither can they predict the onset of an ascending infection of the kidneys. For the present, at least, the tests should be assessed by one who has had experience in their application and interpretation. But we reiterate here the hope, expressed in reviewing a little French book entitled "Comment interpréter en clinique les réponses du laboratoire?," that improvements in medical education will soon make such limitation obsolete.

The General Practitioner and Public Health.

THE relationship between the public health services and the general practitioner has of late years become the subject of much consideration. The general practitioner must always be the executive officer in any scheme of medicine; in the first annual medica report of the Chief Medical Officer of the Ministry of Health, Sir GEORGE NEWMAN made it clear that the practitioner should be not so much an agent for the treatment of obvious disease as an agent for discovery and arrest of disease in its early stages, and a missionary of personal hygiene in its preventive aspect.

A recent contribution to the subject was made by Dr. C. E. S. FLEMMING, a member of the Consultative Council of Medical and Allied Services, in an address delivered at Winsley before the West of England Branch of the Society of Medical Officers of Health. Nothing, said Dr. FLEMMING, has more hindered the development of the medical services than the want of association of the various sections of medicine—a want resulting partly from the individuality of the medical practitioner, but partly also from the prevailing lack of appreciation of the fact that the interest of the individual is also the interest of the community. When public health authorities undertook not only supervision of drainage, water-supply, and housing, but also notification, isolation, and treatment of cases of infectious diseases, their officers came into close contact with the family doctor, and friction sometimes resulted when part-time medical officers combined private practice with official work; but both sides now realise their interdependence. Apart from administration, it is hard to say where separate spheres begin for preventive and curative medicine. If a public health service is to be truly preventive it must consider and possibly control the environment of the people at home and at work, together with their food-supply and all preventable conditions which cause disability, besides participating in constant research. Dr. FLEMMING pointed out that every doctor in this sense must be a member of the public health service, and no official could ever have the same intimate knowledge of the patient's life-history, the same opportunity of detecting disease in its earliest stage, as the practitioner possesses. A communal clinic would be the place where the general practitioner and the medical officer could meet; at such a clinic the patient would require not only expert special opinion, but expert general opinion, and if the communal clinic were run on practical lines the practitioner's value to the community would be much enhanced. He should be able to follow up those cases with which he could not properly deal in his consulting-room or in the patient's home—follow them through to clinic or hospital. There are general difficulties of organisation, as well as many difficulties of detail, to be surmounted before the alliance of practitioner, specialist, and administrator can be made complete. Every student of the Dawson Report knows this. The practitioner is rightly jealous of his professional independence, and in indiscriminate consultation there lies a danger of loss of individual responsibility, as Dr. FLEMMING points out; but with his conclusion that the complexity of society renders necessary an intimate and hearty coöperation between all departments of medicine everyone will agree.

No point made by Dr. FLEMMING calls for more attention than his insistence upon the necessity for the following-up of patients by the medical practitioner who, with a knowledge of the personal and family histories, sends them to clinics or to hospitals, too often to lose sight of them entirely. In this way evidence of late results of treatment is lost—evidence which would, if collected and collated, be of the utmost value in the establishment and regulation of many treatments which now form the subjects of discussion. In several American hospitals, and at the London Hospital, experiments in some such direction as we have outlined have been successful, nd it is clear that in following-up lies a development of the work of a practitioner most vital for the advancement of public health.

[3] THE LANCET, Dec. 3rd, p. 1161.

Annotations.

"Ne quid nimis."

THE STUDY OF DEEP X RAY THERAPY.

MORE than a year ago Dr. Reginald Morton related[1] to the Section of Electro-Therapeutics of the Royal Society of Medicine his impressions of deep X ray therapy gained during a visit to the Frauenklinik at Erlangen. After a week's study of the methods there employed he came away with the conviction that the apparatus and technique constituted a real advance in radiology. Admittedly no new principle was involved, but a greater degree of penetration and intensity was attained at Erlangen than elsewhere, and the results already shown in cases of uterine carcinoma, apart from surgical intervention, were, to say the least, very encouraging. A latent period of scepticism was followed by an increasing rush to the scene of action, with the amusing result that the admission thereto has been strictly rationed. The *British Medical Journal* of Dec. 3rd recounted the difficulties of Dr. Nordentoft, of Copenhagen, in getting to Erlangen. The fact is, and we have it from Prof. Wintz himself, that the work of the radio-therapeutic department has been seriously embarrassed by the attention given to it. Prof. Wintz is desirous of restricting the visitation to a post-graduate course to be held in the early part of next year. Those who intend to take part in it should not only possess a competent knowledge of the German language, but they would be wise to master a book[2] written by Dr. F. Voltz when he was head of the experimental laboratory attached to the radio-therapeutic department at Erlangen. It is a complete exposition of our knowledge of the character of X rays, their chemical and physical properties, and of methods for measuring their wave-length, their penetrating power through various substances, and their quantity in arbitrary units. Not only are these matters described in great detail, with a wealth of numerical tables and diagrams, but the secondary phenomena attending the passage of a beam of X rays through matter are also fully dealt with. The scattering of the primary beam, the excitation of secondary radiation, and the selective absorption have each to be taken into account in an attempt at estimating what the intensity of radiation at any particular point may be.

Dr. Voltz states that the main object of his book is to provide data from which the radiologist may estimate dosage. The treatment adopted is rigidly physical; mathematical formulæ are freely distributed throughout its pages and make its study exhilarating if difficult. The experimental plan of the work actually forms the basis from which the quantitative methods of measurement used in the Erlangen clinic have sprung. It has been felt for many years by radiologists that the means at their disposal for the accurate measurement of doses were scanty. The electrical method described here, which is based upon the principle of the first inoto-quantimeter of Szillard, has been much developed by German physicists in the last few years, and it seems likely enough that this instrument, or some variation of it, will become extensively employed by radiologists. Its use alone will not give them all the information they want, but the fundamental principles upon which it is based will necessarily become better known, and medical men will become more familiar with physical quantities and expressions of which at present they are rather shy.

[1] THE LANCET, 1921, i., 24, 37.

[2] Die Physikalischen und Technischen Grundlagen der Messung und Dosierung der Röntgenstrahlen. By Dr. Friedrich Voltz, Physikalischer Assistent der Strahlenabteilung der Universitäts-frauenklinik Munchen. Berlin: Urban und Schwarzenberg. 1921. Pp. 300. M.96.

MAURITIUS.

MAURITIUS defaults from the standard of the sanitary reformer, despite the fact that the island has been a Crown colony for over 100 years. Such was the inevitable conclusion to be drawn from the graphic account given by Dr. Andrew Balfour to the Royal Society of Tropical Medicine and Hygiene of a recent visit to the island, undertaken at the instance of the Colonial Office and with the object of reporting on the sanitary conditions which had been seriously complained of by the Governor, Sir Hesketh Bell. Up to the middle of last century Mauritius appears to have been a peculiarly pleasant place to live in. Its scenery affords as much variety as can be hoped for in an island rather smaller than the county of Surrey; its climate is mild and equable, even delightful between May and December, and though periodically prolonged heavy rains and destructive hurricanes occur, the porous volcanic soil dries rapidly. But since 1854, when a visitation of cholera swept away 17,000 of the inhabitants, Mauritius has been under the scourge of disease. In 1865 the chance call of a ship at Port Louis from the malarious African coast introduced the *Anopheles costalis*, and the deforestation then in progress, to make room for the sugar cane, had undoubtedly prepared a way for the outbreak of malaria which decimated the island in 1867 and 1868; 31,800 of the population succumbed to this epidemic. Endemic malaria still claims 3000 to 4000 victims every year. Antimalarial measures on a large scale have been attempted, and in many parts of the island canalisation of streams has been carried out or begun as the result of Major Ronald Ross's survey and classic report in 1908. Unfortunately, however, his recommendations were only imperfectly put into effect, despite subsequent efforts by local health officers.

Dr. Balfour found pools in the streets arising from defects in the water pipes, from overflow wastage or drainage from pools in the vegetable gardens; he found stagnant water collecting in waste tins, graveyard urns, and hollow shells of the large edible snail. From all these sources larvæ of *A. costalis* were obtained. The irrigation of extensive sugar plantations, the overflows from unchannelled streams, the reed-grown banks of streams and rivers, and the marine swamps also afforded sufficient evidence of mosquito-breeding haunts to account for the general prevalence of endemic malaria. On the other hand, certain areas are free from the pest, as the result of proper canalisation and clearing of growth of river margins, and here streams are so shaded that the spread of a water weed inimical to mosquito larvæ is allowed full scope. Apart from malaria, the other principal causes of death in Mauritius are pulmonary tuberculosis, dysentery, bronchitis, and pneumonia. The death-rate of children under the age of 5 years in 1918 was over 300 per 1000 births. For the spread of dysentery and enteric fever the shallow wells, with every chance of contamination from the surface which form the water-supply in many parts of the island, are mainly responsible. Moreover, the insanitary conditions of the towns and the primitive methods used for the carriage and disposal of excreta, call for the most active measures of reform throughout the island. In the market places flies reign supreme; dogs have free run of the garbage and refuse heaps, the most elementary precautions being neglected. In the outskirts, pigs in large numbers roam at will, even wallowing in the open sewage pits through the broken-down barriers. It is not surprising, therefore, that among other intestinal disorders helminthic disease, especially ankylostomiasis, is common. Although the health report for 1918 states that a new leper colony was being erected a few miles out of Port Louis, the old leper hospital, condemned as long ago as 1878, was still in use on the outskirts of the town at the time of Dr. Balfour's recent visit. The sale and distribution of hand brooms made by the lepers is doubtless responsible for the spread of the disease, which, in Dr. Balfour's opinion, is more prevalent than is

generally recognised. The want of proper supervision of vessels moored to the quayside of Port Louis readily admits of the transmission and spread of plague by infected rats which are able to land without restraint.

It is evident from Dr. Balfour's disclosures that drastic action is imperative. To meet the situation, a levy on the sugar industry, the staple trade of the island, to the amount of £1,000,000 has been proposed. But more than this is called for. Inadequate medical and sanitary staff with insufficient authority and power of administration would seem to account for much of the delay in carrying out the greatly needed preventive and sanitary measures of reform. Much good work has been and is being done by the Mauritian doctors in the hospitals, bacteriological and public health departments, but their powers are limited and their range of duties overwhelming in the face of such heavy odds. Valuable aid has been rendered by voluntary bodies and by the Rockefeller Foundation. Dr. Balfour is hopeful that the unenviable reputation of the island may yet be removed by the application of modern knowledge on vigorous and sound lines. But the efforts will have to be persistent and strenuous, and, moreover, inevitably expensive. The picture of the insanitary conditions of the island drawn by so impartial an observer as Dr. Balfour does not appear to fix the responsibility therefor on any one race, but would imply that the community as a whole pays but little attention to the counsel of its medical advisers. Dr. C. L. D'Avoine, whose letter we publish in this issue, appears to blame the slackness of the supervision exercised over the coolie class which, in view of Dr. Balfour's exposure of the general attitude, is hardly surprising.

THE GENESIS OF TUBERCULOUS DISEASE.

ONE of the most remarkable tendencies in modern medicine is to refer the genesis of disease in adult life and old age to childhood and even to infancy. Mental disease in the adult is now often traced to psychic trauma in childhood, and the monarticular arthritis of middle and old age to almost forgotten and apparently transient injuries to the same joint several decades earlier. Many similar examples could be given. In the past we have been rather like the child who, seeing a picture of an iceberg, thinks that it is floating on the surface of the water, and does not appreciate the size of the mass of which only a small fraction is visible. The discovery of the tubercle bacillus gave us for many years a myopic view of the duration of that disease. Inoculation of animals with the tubercle bacillus being followed in a few weeks or months by fatal tuberculosis, what was more natural than to assume that some similarly expeditious process was that which usually occurred in man? There was, indeed, much reliable evidence to prove that a rapid sequence of infection, disease, and death is fairly common. For many years Behring's dictum that pulmonary tuberculosis in the adult is the end of the song sung to the baby in his cradle was regarded as more poetic than true. In 1895 Dr. K. F. Andvord, of Christiania, put speculative hypothesis on a much surer footing, and a perusal of his statistical and critically analytical paper[1] leaves even the modern reader impressed by his insight. Many of the criteria by which the hypothesis can now be tested were then lacking; the Pirquet test, for example, had not been devised. Yet Dr. Andvord found enough evidence on which to make out a plausible case, and the mass of papers which have appeared on this subject since 1895 are a bulky testimonial to Dr. Andvord's pioneer work.

In the current number of *Tubercle* Dr. Andvord discusses the relation of tuberculosis in the adult to infection in childhood, and shows how the evidence of post-mortem examinations, of mass clinical examinations in certain areas, of vital statistics, and of many other lines of investigation can be made to converge on this one point. One of the tests to which he puts his theory is the consideration of the influence of a vigorous anti-tuberculosis campaign on a population classed in so many age-groups. If his theory is correct, this campaign should first reduce the incidence of tuberculosis in the youngest age-class, and should for many years have little or no influence on the older classes. For persons over 30, for example, would have received their fatal infection much earlier. The experience of the Finnish National Association for Combating Tuberculosis throws instructive light on this point. In 1909 a certain district in Finland was selected for a large-scale experiment in anti-tuberculosis warfare. A mass clinical examination of practically all its inhabitants was made, and then for 10 years a hustling anti-tuberculosis campaign was conducted, with a network of dispensaries, propaganda centres, and many other weapons. At the end of this period another mass clinical examination was conducted in the same district, and it was found that the cases of pulmonary tuberculosis had dwindled to a third of their total number 10 years ago. But while, in the first decade of life, this morbidity was less than a quarter of what it was, the reduction in the second decade of life was only to a little less than a third, and in the third decade only to a half. Between the ages of 30 and 50 there was little or no change in the morbidity from pulmonary tuberculosis. Another conclusion to which Dr. Andvord comes is that not only is the fatal pulmonary tuberculosis of adult life the result of severe infection in childhood, but that in a large proportion of cases the disease is clinically demonstrable from childhood onwards. Even in childhood it is possible to distinguish between the case showing a mild, benign infection, and that already more or less doomed to develop fatal tuberculosis later in life. Dr. Andvord, indeed, goes so far as to say that the gulf between the two is wide. He admits the possibility of a narrow belt of intermediate cases running between these two extremes, but maintains that it is very narrow.

If, as he argues, 80 to 90 per cent. of fatal cases of pulmonary tuberculosis begin within the first three or four years of life, and if by deferring the first infection till after the fourth year we can force it to assume a permanently benign instead of a slowly virulent character, the task of suppressing tuberculosis is greatly simplified—on paper at any rate. We may, perhaps, come to focus attention on these first four fateful years instead of frittering away our energies and resources in rescuing from exposure to infection adults who are either already more or less immune on account of a benign, accidental inoculation, or whose real danger lies in a series of reauto-infections. This class requires rescuing on quite other principles than the prevention of exogenous infection. The time may not be far distant when almost every potential consumptive will be identified as such in early childhood, and will enjoy systematic supervision and treatment to the end of his days so that he may not end them in the misery of fatal pulmonary tuberculosis. The comprehensiveness and simplicity of Dr. Andvord's conception of tuberculosis are certainly alluringly plausible.

[1] Norsk Magazin for Lægevidenskaben, 1895, No. 12.

THE THREAD OF BIOCHEMISTRY.

WHETHER the medical student should be taught chemistry, physics, and biology as independent sciences, or go through a specially selected course in consideration of his future needs, is still a moot question. Presumably within a few years a preliminary survey of these subjects will have been made by every student during school years, specialised courses being reserved for the medical curriculum. In any case a considerable extension of biochemical teaching may be forecasted, for the proper interpretation of many of the newer clinical methods of investigation—for example, gastric analysis, determination of basal metabolism, calculation of diabetic diets, and renal function—depends on a knowledge of biological chemistry greater than that now exacted

from the medical student. The choice of Dr. R. H. A. Plimmer for the new chair of chemistry, attached to St. Thomas's Hospital in the University of London, is a happy one, and it will bring added strength to a school already well-equipped in the department of chemical pathology. It is still said with some measure of truth that the practitioner derives little benefit from a year at the preliminary sciences, because the materials and time at his disposal are so scanty that he can treat his patients only by the simpler clinical methods. The larger branch of medicine is still that founded on tradition modified by individual experience but untested by critical experiment, while the newer shoots grow only slowly at the expense of the old. Unless the practitioner is thoroughly grounded in the scientific bases of medicine he may fail to realise that biochemical methods do not exclude the older ones, but often serve to explain their action and justify their use. Prof. Plimmer's opportunity is to keep in touch throughout their career with students whom he has taught in their first year, and they will naturally return, even after qualification, to seek his help in the elucidation of problems.

PARATHYROID THERAPY.

MODERN views favour the complete structural and functional differentiation of the thyroid and parathyroid, though previously there was considerable doubt on the matter. Experimental work on the parathyroids has been largely confined to the production of tetany, and clinically this condition and other convulsive states have been studied in relation to these glands. From clinical and experimental work two functions have been assigned to the parathyroids; first, the control of calcium metabolism, and second, a function of rendering toxic substances harmless. In tetany Noel Paton and his co-workers showed that methyl-guanidine was the toxic causal agent of the condition of tetany and that this substance was normally destroyed by the parathyroids. Edmunds demonstrated that calcium in large doses would control the tetanic convulsions following parathyroidectomy. There does not seem to be any evidence that calcium plays a part in the detoxicating process in this condition. Launoy formulated a theory that infantile tetany was due to a preceding toxic state which damaged the parathyroids permanently, so that any subsequent toxic condition was liable to precipitate a tetanic attack.

In a recent communication to the Section of Therapeutics and Pharmacology of the Royal Society of Medicine Dr. H. W. Vines outlined these facts and proceeded to consider the effect of parathyroid therapy in cases where there is a calcium deficiency without any convulsive signs. His investigation was based on the fact that in a variety of conditions a deficiency is found in the ionised calcium of the blood, not necessarily accompanied by a deficiency of the total calcium. Over 100 cases had been studied by him, but in this paper he dealt only with ulcerative cases. These include 10 cases of varicose ulcer, 12 cases of gastric or duodenal ulcer, 2 cases of erosion of the cervix uteri, and 6 cases of inoperable carcinoma. Varicose ulcers were found to improve under intramuscular injection of calcium salts[1] up to a certain point, but did not proceed to complete cure; under parathyroid therapy[2] healing was more rapid in cases kept at rest and in early cases. For these ulcers g. 1/10 of the dried gland was given daily until laboratory tests showed that the ionised calcium had returned to a normal figure; the gland was then continued in reduced doses until healing was complete. According to Dr. Vines after-treatment is important; any irritation or eczema, premonitory of a return of the ulcer, must be met with an increase in parathyroid dosage, and thus the ulcer can be kept healed. Beneficial results were also obtained by parathyroid therapy in the cases of intestinal ulceration. Pain and vomiting were decreased, an improvement in the general condition was noticed, and weight usually increased. The disappearance of symptoms again appears to be consequent on the return of the ionised calcium of the serum to normal. Dr. Vines suggests that the important factors in these ulcerative conditions are a primary toxæmia combined with a secondary deficiency of ionic calcium. The latter may be due to the toxic effect of the former upon the parathyroid glands, disturbing calcium metabolism, the site of development of the ulcers being due to this general cause in conjunction with local causes. In varicose ulceration the latter local condition may be dependent on inadequate blood-supply, and probably some slight trauma in the varicose area where nutrition and cell resistance are least effective. In gastric ulcer there is the same general cause, and Dr. Vines has noted that gastric ulceration is commonly associated with some toxic state.

Friedman has shown that parathyroidectomised rabbits frequently developed acute gastric ulcer which did not heal spontaneously, whereas ulcers produced in healthy animals by mechanical means are said to heal invariably. Dr. Vines suggests, further, that in the former animals the absence of healing is due to a deficiency of ionic calcium following the removal of the parathyroids, but that in the latter animals calcium metabolism is normal and natural healing occurs. Dr. Vines claims that the results obtained by parathyroid therapy in these cases substantiate theories put forward by other workers; that there is evidence of the importance of ionised calcium in the repair of the ulcerated areas; and finally, that the beneficial effects obtained by him suggest that these ulcerative states are partially due to an insufficiency of parathyroid secretion. No marked changes have been observed in the condition of the carcinoma cases beyond a decrease in pain and discomfort during parathyroid treatment. In these cases Dr. Vines considers the ionic calcium deficiency as probably secondary to the malignant ulceration rather than primary. He concludes that the two factors common to all the cases are a chronic toxæmic state and a deficiency in the ionised calcium. He adds a speculative hypothesis that all acute or chronic toxic states may react harmfully to a greater or less extent upon the parathyroid glands, causing a disturbance in calcium metabolism and a decrease in tissue resistance. This is to some extent borne out by Thompson and Leighton's work, where induced and chronic parathyroid deficiency was manifested by loss of weight and greatly decreased resistance to infection. It seems possible that parathyroid therapy may be of use in certain chronic conditions, if not also during the acute attack of the more common infective ailments.

[1] Grove and Vines: Brit. Med. Jour., 1921, ii., 40.
[2] Ibid., 1921, ii., 687.

THE TREATMENT OF FRACTURES.

ABOUT five years ago Mr. E. W. Hey Groves presented a modest exposition of the therapeutics of fractures in which special operative methods and novel modes of fixation of bones, founded upon a long series of careful experimental observations on animals, were given the pride of place. For various reasons this monograph did not make a universal appeal; the armamentarium necessary for carrying out the author's original technical manœuvres appeared unduly formidable and complex, not only to the ordinary surgeon, but also to the surgeon possessing the true sense of bodily mechanics—an attribute appertaining to physiology rather than to carpentry. But in a second edition, which is to be regarded essentially as a new work,[1] the author has given the surgical world a monograph of rare judgment and

[1] On Modern Methods of Treating Fractures, including the Jacksonian Prize Essay on Bone Grafting. Second edition. By E. W. Hey Groves, M.S., M.D., B.Sc. Lond., F.R.C.S. Eng., Surgeon to the Bristol General Hospital, Surgical Director of the Ministry of Pensions Hospital, Bath. Bristol: John Wright and Sons, Ltd. 1921. With 296 illustrations. Pp. 435. 30s.

maturity. His enthusiasm for some of the technical procedures which he himself has introduced remains undiminished, although he writes modestly enough of his results. His method of using an encircling suture in fractures of the patella—far more efficient than the conventional operation—should now be established as a routine. Mr. Hey Groves's views on bone grafting are particularly illuminating, especially his exposition of the indications for using the inlay bone graft and the intramedullary bone graft. The influence of his wide experience, derived from a participation in the reconstructive surgery of the war during the past five years, can now be traced in the critical survey which he has made of the whole gamut of fracture therapeutics. Mr. Hey Groves leads us step by step to see that the modern treatment of fractures implies the application of an appropriate procedure to a given type of fracture or at a certain stage in any fracture; there is no real conflict between the schools representing, for instance, the non-operative and the operative methods of treatment. The modern fracture surgeon must be a master of all methods, and must know when and where to apply any particular one. The thesis is developed and maintained in a most lucid and convincing manner, and will serve as a model for sections on fractures in future text-books of surgery.

TREATMENT OF SYPHILIS IN THE NAVY.

THE results of treatment for syphilis are more patent in the Navy than elsewhere, in so far as the patients are continuously under medical control and rarely pass out of sight. Two articles[1] by Surgeon-Commander Laurence Kilroy, on the treatment of syphilis in the Mediterranean Fleet, are the more welcome as the Fleet Medical Officer is not responsible for any single ship, but is advisory to the whole staff of medical officers. Commander Kilroy measures the success of treatment by its effect on the Wassermann reaction, though he hopes that the quicker Sigma test (THE LANCET, 1921, i., 956) may replace that. He finds that intramuscular injections of arsenobenzol once a fortnight produce more effect than intravenous injections at shorter intervals, and that courses of mercury by the mouth increase the effect of arsenobenzol on the W.R. He distinguishes five classes of cases of syphilis, with appropriate treatment for each.

A. Early primary: In the first fortnight after the appearance of the sore, spirochæta pallida seen with dark-ground illumination, W.R.−. *B*. Late primary: Sore, and W.R.+. *C*. Secondary: Usual signs, and W.R.+. *D*. Old cases: W.R.+, and perhaps other signs. *E*. Old cases with nervous symptoms or positive Wassermann in cerebro-spinal fluid.

An *A* case gets a "unit course," that is in four months, eight intramuscular injections of NAB, or sulpharsenol, at fortnightly intervals, and at the same time 4 gr. of grey powder daily. If at the end of the course there are no signs of syphilis and W.R.−, treatment ceases; but the serum is tested every three months for two years, and if on all these eight occasions W.R.− patient is considered cured. If a W.R.+ appears at any time, patient has become a *B* case and is treated accordingly. A *B* case or a *C* case gets a "unit course," then three months' mercury by the mouth or by injection, followed by a second unit course, itself preceded and followed by a W.R. If both tests are negative, treatment ceases and W.R. is tested every three months for two years. If all are negative, patient is considered cured. If the preceding W.R. is positive, but the second negative, repeat the unit course after three months' mercury, with a W.R. before and after. A W.R.+ at any time after the second unit course makes the case a *D* case. All *D* cases should have their cerebro-spinal fluid completely examined in hospital: a W.R.+ makes the case an *E* case. If the cerebro-spinal fluid of a *D* case gives a W.R.−, send patient back to his ship, give him three unit courses, with mercury in the intervals, testing the W.R. before and after the second and third courses. If no two consecutive W.R.'s are negative, give "half unit" (four injections) every four months, the reaction being tested before and after. As soon as two consecutive W.R.'s are negative stop treatment and merely test the reaction every three months for two years, and if all are negative consider patient cured. A W.R.+ now at any time makes patient an *E* case, to be treated in hospital by a specialist.

Commander Kilroy considers the appointment of consultants in syphilis to be a great advance, but he holds that ordinary cases of syphilis up to *E* may be treated on board; they do not require to be sent to hospitals. In hospital they cost 15*s*. 6*d*. per day (pay 5*s*. 6*d*., hospital charges 10*s*.); in ships they cost 7*s*. 6*d*. per day (pay 5*s*. 6*d*., victualling 2*s*.), and the service avoids the trouble and time spent on transferring them. Appeal is made for a specialist at head-quarters to coördinate the work of the specialists in syphilis throughout the service, and to advise what methods have been found most satisfactory. Those concerned with the treatment of syphilis will find it well to study Commander Kilroy's papers. Out of a total number of 46 cases in *Iron Duke*, all *A* and *B* cases recovered, 83 per cent. of *C*, and 64 per cent. of *D*.

[1] Journal of the Royal Naval Medical Service, July and October, 1921.

ANTI-ANAPHYLAXIS.

THE immunologist is the despair of the average medical reader, for he is constantly devising new terms to explain his discoveries and almost as rapidly discarding them as newer discoveries render the old terms untenable. There is also a further difficulty in the fact that a term devised by a foreign scientist has often to be incorporated into our vocabulary as it stands, because it is not readily translatable; as an example we may quote the terse but valuable term "subintrant," introduced by Besredka to describe his special method of preventing anaphylactic shock. To Besredka also, in conjunction with Steinhardt, we are indebted for the introduction of the term "anti-anaphylaxis" to describe the condition of insensibility to further injections of the anaphylactic antigen. We are doubtful if the term can really be regarded as a satisfactory one, and its wide use to cover a number of different immunological states has weakened its significance not a little. It would strengthen our claim to consistency if we confined this term to the actual state of being insensitive to the anaphylactic antigen, rather than enlarged it to cover the measures—often purely empirical—which the clinical pathologist devises to counteract anaphylactic symptoms in the patient. But the deed is done and the term anti-anaphylaxis now embraces in the minds of most physicians every aspect of desensitisation. In a valuable report[1] on this subject by MM. P. Widal, P. Abrami and P. Vallery-Radot, read before the French Congress of Medicine at Strasbourg in October, after defining anaphylaxis as colloidoclasia or "the rupture of the physical equilibrium of the colloids of the body," the authors proceed to lay down the various methods of desensitisation. As they correctly point out, a patient who has been deliberately sensitised with serum can be watched and protected from ill-effects after the second or anaphylactic injection, because the date of his first inoculation is, or should be, known. But in the case of patients who have become sensitised in some unknown way and at some remote time in their history, by absorption of protein through gastro-intestinal or respiratory mucous membrane, a different problem confronts the physician. He must first discover the protein which is at fault, and then resort to his armoury of protective measures, such as subintrant doses, or vaccination with homologous or heterogeneous proteins, administration of peptone, crystalloids — e.g., sodium chloride — or finally adrenalin. All these measures are fully discussed by the authors, and also by M. Pélin in a subsequent paper. They succeed in making anti-anaphylaxis a live issue whatever view may be taken of the term itself.

Our current number contains an original article by Prof. Storm van Leeuwen of Leiden, in which he records a series of cases of spasmodic bronchial asthma treated with tuberculin. Excluding

[1] Presse Médicale, Oct. 1st, 1921, p. 781.

for the moment the possibility of some of these cases having had concealed tuberculous lesions which responded to the tuberculin, this treatment recalls the attempt to treat the sensitised patient with heterogeneous protein, as in the therapeutic application of tuberculin. Prof. van Leeuwen has not followed out this line of thought as far as he doubtless will in the future if his results should be confirmed by himself and others; but in the meanwhile we record it as another effort to explore protein sensitisation, a condition which looms in the background of many obscure pathological conditions.

HÆMATOPHAGY.

IT is generally agreed that "old" red blood corpuscles are normally taken up in small numbers by phagocytic cells in the spleen and bone-marrow. Under pathological conditions abundant phagocytosis may be found in these situations, in lymphatic glands, and occasionally in the circulating blood, the active cells being endothelial and large mononuclear leucocytes. This view appears to be firmly based on objective facts. The further history of these eaten red cells is not so clear, though a quantity of evidence of various kinds is consistent with the received idea that they are broken up by some process akin to digestion, and the remnants used to form fresh red cells in the bone-marrow, except for that part of the hæmoglobin which is diverted as bile-pigment to the bowel. Dr. H. M. Woodcock, well-known for his varied work in protozoology, has lately[1] proposed that this process of hæmatophagy, as he calls it, is of more frequent occurrence in the body than has been supposed and of far wider significance. His work began with a study of the nature and origin of blood-platelets, and he concludes that these bodies represent certain products of the digestion of red blood corpuscles in the cytoplasm of large mononuclear cells and megacaryocytes, together with a small portion of the cytoplasm itself, separated from the cell. His derivation of platelets from the giant cells of bone-marrow is in accordance with the work of J. H. Wright, and several writers have affirmed a belief in their origin from red corpuscles; Dr. Woodcock combines these apparently divergent views in an original conception. He suggests, further, that the enigmatical round areas found in the cytoplasm of the guinea-pig's leucocytes ("Kurloff bodies"), which have been variously interpreted as parasites, secretory products, and archoplasm, are in reality red corpuscles in process of digestion along somewhat abnormal lines. The same interpretation is then applied to the Negri bodies found in the brain in rabies, and to the Guarnieri corpuscles in the epidermis in small-pox and vaccinia. And finally, the small stainable objects found inside endothelial cells in typhus, and recently identified as the causative parasite *Rickettsia*, are explained as being nothing more than platelet granules, a by-product of the digestion of red corpuscles. It looks indeed almost as if Dr. Woodcock would soon be advocating that a good many of the tissues of the body feed upon the red corpuscles in gross, and out of them make at least a sensible proportion of the curious appearances on which the histologist whets his imagination. Some such extension of the import of hæmatophagy is, in fact, hinted at towards the end of his paper.

New interpretations of old phenomena are always of interest, and the unconventional conclusions of one who comes without prejudice and with a wealth of microscopical experience into well-trodden paths that he has not explored before are sure to be worth consideration. But it seems scarcely probable that Dr. Woodcock will convince on his present evidence. His conclusions are based entirely on the similarities of microscopic appearances, using rather a limited range of methods of preparation. The tracing of sequences and developments in this way is notoriously liable to error, and in his own sequences the early stages of the transformation at which the body under examination is indisputably a red corpuscle, and yet not an unaltered one, seem to be sparsely illustrated. He has, however, the immense advantage over others in that he has been able to ponder over the actual specimens, for which the best drawings must be a poor substitute, though Miss Rhodes's pictures, accompanying Dr. Woodcock's contribution are very good. As in all such cases, one must attach more weight to the author's interpretations than one would readily do were his data capable of complete presentation to the critic. The nature of blood-platelets, of the bodies of Kurloff, Negri, and Guarnieri, and of the admittedly doubtful *Rickettsia*, are not certainly known. There does not appear to be anything in Dr. Woodcock's theses concerning them which is flatly at variance with agreed facts. More cannot yet be said, for experiment is lacking.

[1] Journal of the Royal Army Medical Corps, November and December, 1921.

EPITROCHLEAR ADENOPATHY IN SYPHILIS.

ACCORDING to Dr. R. H. Rulison,[1] the importance of enlargement of the epitrochlear glands as a diagnostic sign of syphilis was first described by Sigmund and was later emphasised by Fournier, De Amicis, Hochsinger, Heubner, and others. Dr. Rulison's own observations were made on 252 cases of syphilis and 43 non-syphilitic cases at the Department of Syphilology of the Bellevue Hospital, New York, with the following results: (1) Epitrochlear adenopathy was found to be an early, persistent, and common sign of syphilitic infection, being present on one or both sides in 79 per cent. and absent in 21 per cent. (2) It was not pathognomonic, for it was found in 23·25 per cent. of the non-syphilitic cases. (3) It proved to be a valuable aid in diagnosis during a period of the primary stage, when both the dark-field examination and the Wassermann reaction were often negative. (4) It was valuable in treated and latent cases, and when present called for repeated laboratory tests before the possibility of syphilis could be excluded. (5) Since the condition was unilateral in one-tenth of the cases of syphilis, the statement that unilateral adenopathy is non-specific is unwarranted, and cases presenting this condition should be investigated with the same care as those with bilateral adenopathy. (6) Treatment did not cause complete resolution of the adenopathy. (7) Epitrochlear adenopathy was less common in neurosyphilis than in other forms of the disease.

[1] American Journal of Syphilis, October, 1921.

THE MEDICAL INSURANCE AGENCY.

A MEETING of the Committee of Management of the Medical Insurance Agency was held at 429, Strand, on Friday, Dec. 9th, when the Chairman, as a preliminary, introduced to the Committee Mr. L. FERRIS-SCOTT, F.C.A., who has recently succeeded Mr. W. E. Warne as financial secretary and business manager of the British Medical Association. Mr. Ferris-Scott is acting as secretary or general supervisor of the financial side of the Agency.

Chairman's Interim Report.

Dr. G. E. HASLIP, the chairman, made an interim report to the Committee covering nine months ending Sept. 30th, 1921, and was able to show that all the business transacted by the Agency showed steady progress. He said:—

Life assurances and insurances of motor car risks, which are two of the principal sources of income to the Agency, continue to increase, reflecting the confidence placed by members of the profession in the advice and assistance given by the Agency in the completion of suitable contracts. In life business, the Agency has maintained the high standard set up in 1920 in the number of new policies negotiated. The contracts have been spread over a group of offices of the highest standing, thus continuing the principle of combining security for the assured with complete freedom of action for the Agency.

In respect of life assurance, he said that the sums assured under new policies represented £85,000, with an annual premium of £2700, 84 policies having been negotiated in the period under review.

In respect of motor-car insurance he said:—

The placing of these risks has engaged the serious attention of the Agency in view of the fact that the premium rates were again advanced in April of this year. Not only have the rates in all the leading offices increased, but in the case of cars of small horse-power, minimum rates have been enforced. For example, a car of 12 h.p. originally costing £400, which by use and age has decreased in value to £250, is assessed in premium at the same rate as a new car of similar horse-power and a value of £400. The Agency realising that such a decision would cause dissatisfaction to many of the insured persons on renewal, took the matter up with the principal company accepting these risks. The explanation given was that for some years offices accepting motor-car risks had steadily lost money, culminating in somewhat serious losses in 1920. An unduly large percentage of the claims arising under motor-car policies were found to be among the smaller horse-power cars, and it was for this reason the minimum rate was introduced. The Agency has received many complaints as to the method of assessment, but in most cases has been able to retain the insured and secure a renewal.

There was reported also by the Chairman a steady increase under the headings of the fire, household, and accident insurances, the advice of the Agency being regularly sought in the choice of suitable contracts. For household purposes the Agency is recommending, said the report, the taking of full comprehensive policies, while by arrangements with Lloyds, medical men can secure through the Agency policies against a form of larceny to which they are special victims—namely, robberies from surgeries and waiting-rooms.

The Chairman commented on the fact that although progress had been so marked only a small number of medical men had as yet taken advantage of the facilities offered, considering the number of practitioners on the Register, and considering also that through the courtesy of the British Medical Association the Agency enjoys the privilege of distributing inquiry cards with all the applications for subscriptions to the Association. In this connexion Dr. Haslip acknowledged the particular indebtedness of the Agency to the medical secretary of the Association for his interest and for his action in appealing to the officers of the organisation of the Association to make the work of the Agency more widely known.

Finally, Dr. Haslip recommended that the Committee should make further grants to medical charities, for which purpose a sum of £1055 was available, being the whole of the surplus in hand.

Grants to Medical Charities.

The report of the Chairman having been received and approved, the following grants to medical charities were approved: Royal Medical Benevolent Fund, £315; Royal Medical Benevolent Fund Guild, £315; Epsom College Benevolent Fund, £315; Royal Medical Benevolent Fund Society of Ireland, £25; Birmingham Medical Benevolent Society, £25; Lincolnshire Medical Benevolent Society, £25. As a result of this distribution the total sums now voted by the Agency to medical charities reaches £8400, while the amount distributed in the past year is exactly £2000.

The Committee of Management.

Having regard to the growth of the work of the Agency and the amount of money which is and will be available for distribution, Sir Dawson Williams raised the question of increasing the number of those serving on the Committee. It was resolved that a suitable list of names from among those already insured through the medium of the Agency should be prepared in order that a certain number of representative practitioners may be invited to join the Committee.

FOOD POISONING AT CLITHEROE.—A compendious report on the recent outbreak of ptomaine poisoning at Clitheroe has been presented to the Borough Health Committee by Dr. W. E. Barker, medical officer of health, who concludes that "a crude working knowledge of the rudiments of bacteriology would appear to be a necessary equipment in the public catering profession."

STUDIES IN MILK.

BY R. STENHOUSE WILLIAMS, B.SC., M.B., C.M. EDIN., D.P.H. CAMB.,

RESEARCH BACTERIOLOGIST IN DAIRYING TO THE MINISTRY OF AGRICULTURE AND FISHERIES.

IN a recent leading article[1] dealing with a Clean Milk-supply mention was made of the important work now being carried out at the National Institute for Research in Dairying. This Institute was founded in 1913 at University College, Reading, in order to help to improve the milk-supply of the country, in the belief that help coming from within the milk industry itself was likely to prove the surest way of promoting progress.

Losses Found in the Milk Industry.

Work upon this subject began in 1916, as the result of an inquiry[2] concerning the losses and causes of loss which were being incurred by the milk industry. Table I. shows the losses which were found to be incurred in the two districts from which statistics were obtained. In district 2 it was only possible to estimate the losses from souring, but there is no reason to suppose that the other sources of loss differed materially from those found in district 1.

TABLE I.—*District 1.*

—	Gallons of milk annually.	Value at 1*s.* a gallon.
Total supply	90,000,000	£4,500,000
Losses—		
(1) 1% sour	900,000	45,000
(2) 3 pints per churn lost by splashing	1,965,441	98,272
(3) 10% pasteurised at ½*d.* a gallon	8,713,455	18,153
(4) Irregularity of supply and demand necessitating purchase of accommodation milk and sale of surplus at a loss, 1*d.* a gall.	—	375,000
Total losses		£536,425

These losses represent a sum of about one-ninth of the monetary value of this supply.

District 2.

Total supply	75,000,000	£3,750,000
Losses—		
1–2% sour (at 1%)	750,000	37,500

These losses were estimated at a time when the price of milk was much lower than it is now and the figures would need to be revised for money values at the present time. This inquiry led on to the taking of steps at the Institute to prevent the loss by souring and consequently a great deal of the need for pasteurisation.

Comparative Studies of Clean and Average Commercial Milk.

It may be said by way of preface that at the time these losses were discovered the country was at war, the Institute possessed neither cows nor dairy of its own, and the staff was very limited in number. It was not possible, therefore, to study the subject from all sides at once, and a beginning was made by the study of the cleanest commercial milk which could be found, in comparison with an average milk which was certainly no worse than much of that on the market. It was hoped that in this way knowledge might be gained of the relative states of average commercial milk and of the cleanest commercial milk that was known. In carrying out the work it was necessary to consider, not only the bacteriological content of the two types of milk, but also the periods of time during which each type remained sweet, for it is by the duration of sweetness

that the average consumer judges his milk-supply. It is also of the greatest importance to the dealer. In order that the condition of the milk at all periods of the year, and at varying ages might be known, samples have been studied week by week since November, 1916.

Bacteriological Condition.

From November, 1916, to December, 1918, clean milk was examined when 24 hours old, and during that time it failed to pass the highest standard of bacteriological cleanliness (10,000 colonies in 1 c.cm.) on three occasions only. On two of these occasions the bacteriological counts did not exceed 230,000, and coliform organisms were not found in 1 c.cm. of the milk. On the third the number of colonies of bacteria was uncountable, and coliform organisms were found in 1 c.cm. of the milk. This was the only really unsatisfactory sample which was received among 100 samples examined during a period of more than two years. On ten occasions coliform organisms, as represented by the production of acid and gas in lactose-peptone water, were found in 1 c.cm. or less of the milk.[3]

When these results were compared with those obtained from the samples of average milk, generally not more than nine and never more than 12 hours old at the time of examination, a great difference in bacteriological cleanliness was found. Whereas the clean milk maintained an almost uniform standard, which was well below the 10,000 limit at all seasons of the year, the average milk could not be relied upon to maintain any bacteriological standard from one day to the next. Sometimes two or three consecutive satisfactory counts were found and then they would run up, perhaps into the millions, and remain there throughout a prolonged series of examinations. There was no sort of uniformity in the counts obtained, and 65 of the 96 samples which were examined contained coliform organisms in 1 c.cm. or less.

The difference between the two sets of results was extremely interesting, especially when it is remembered that the clean milk was 24 hours old at the time of its examination, was cooled at the farm, with water from a deep well, to temperatures which varied by as much as 16° F. (46° F. to 62° F.) in the course of a year and travelled by rail in pint bottles without any special provision for keeping it cold, so that it reached the laboratory at temperatures which varied between 37° F. and 76° F. The average milk on the other hand was not more than 12 hours old when examined.

Relative Periods of Sweetness.

When a study was made of the relative periods of time during which the samples from these two sources remained sweet under similar conditions of storage in the laboratory, it was found that there was a marked difference in the keeping qualities of the two types of milk. This is demonstrated by the figures shown in Table II.[3]

TABLE II.

Milk.	Period.	Total no. of samples.	No. sweet for more than 1·75 days at lab. temp.	No. sweet for less than 1·75 days at lab. temp.
Clean ..	31/5/17 to 31/5/18	51	51	0
Average	31/5/17 to 30/5/18	49	24	25

Table I. shows that no sample of clean milk was sour within a day and three-quarters from the time of milking, whereas 25 of the 49 samples of average milk were sour within this period of time. It is difficult to over-estimate the economic importance of this observation since a successful milk trader must be in a position to guarantee sweetness in the consumer's house.

Influence of Worker and Farm Conditions.

The study of the causes which gave rise to these different types of milk naturally followed on these results, and the nature of that study was to some extent influenced by the conditions which existed on the farm which was producing the clean milk which has been described. The milk on that farm[4] was being taken in a special milking-shed, and into covered buckets by clean milkers, who had the advantages of an abundant water-supply and light. After it had been taken from the cows it was carried to a specially constructed dairy in which it was cooled and in which all the apparatus necessary for washing and steaming utensils, &c., was provided. The buildings involved a considerable capital outlay which was hardly possible to many farmers. It was, therefore, necessary to discover by what means and to what extent similar results could be obtained in an ordinary cowshed.

This work was done by Knight and Freear[5] and the results were published in 1920. It was carried out in an ordinary cowshed, and the milking was done at the same time as that of the cows which were not being used for the experiment. The success of the experiment did not depend upon any special advantages in the surroundings in which it was performed. Table III. shows the results which were obtained and demonstrates the possibility of producing clean milk under average farm conditions, provided that the milker understands his business and is provided with light, water, and steam.

TABLE III.

(A) Numbers of samples showing more than 10,000 colonies in 1 c.cm. of milk.

(B) Average of colonies found in 1 c.cm. of milk in remaining samples.

Series.	Date 1918–1919.	—	No. of exptmts.	Buckets.	(A)	(B)
1	Oct. 12th to Nov. 13th.	Buckets washed by farm hands.	12	O.	2	2360
				C.	10	10000
2	Nov. 13th to Dec. 14th.	Buckets washed by clean milker (farm method).	14	O.	1	3200
				C.	2	3991
3	Jan. 11th to Mar. 3rd.	Buckets washed and steamed, cows ungroomed.	30	O.	5	4274
				C.	0	1505
4	Mar. 5th to June 20th.	Buckets washed and steamed. Cows' udders clipped.	51	O.	10	2505
				C.	2	516
5	June 23rd to Sept. 4th.	Buckets washed and steamed. Udders clipped, cows washed and dried.	42	O.	2	900
				C.	2	388

O., open. C., covered.

These experiments were conducted over a limited period of time at a particular farm, and although since repeated with similar results under conditions worse than those existing at this farm, yet it remains to be shown whether it is possible to produce really clean milk in a cowshed with the same certainty as when the milk is taken in a special milking shed. That problem has yet to be investigated. It is, however, quite clear that, given the right person, with comparatively little apparatus very wonderful results can be obtained in an ordinary cowshed. The chief factor in the whole situation is the individual.

Influence of State of Utensils.

While this work was in progress evidence had accumulated which led us to think that the condition of the utensils had an important bearing upon the cleanliness of the milk. Attention was first drawn to this fact by the consideration of the results obtained from the average milk in the first series of experiments which have been described. When the results were set out in a chart it was found that there was an astonishing rise in the bacterial content of the milk during the months of May to September in each year. The milk was being examined at a maximum age of

12 hours, with an average of not more than nine hours, at a time when any serious proliferation of organisms in clean milk does not take place. The cows were out to grass, and cleaner than in the winter-time, and the cowshed was empty except when the cows were being milked. The conditions appeared to be favourable to a cleaner milk production, yet as a fact it was dirtier. The utensils, however, were washed with only moderate care and were not steamed. It appeared probable that, in the warm weather and in their moist condition, they were a serious source of contamination to the milk. Confirmation of this probability was obtained by Cumming and Mattick,[6] who demonstrated the condition in which milk-churns are being returned to the farmer.

TABLE IV.—*Classification of 500 Churns by Inspection. Oct. 9th–Nov. 20th, 1919.*

Clean and sweet.		Milk absent. Evil smell.		Churn not washed. Milk present.	Churn badly washed.
Dry.	Wet.	Dry.	Wet.		
81 16%	140 28%	5 1%	118 24%	81 16%	75 15%

Table IV. gives a summary of the results which they obtained, and the results of the bacteriological examinations of these churns further confirmed the observations they had made since they demonstrated that very few, even of those churns which were clean and sweet and dry, had been efficiently washed and steamed before they were returned to the farmer. This is well brought out in Table V. and is an illustration of the need, not only for greater knowledge of the method necessary to attain the object desired, but also for more coöperation within the industry. If the interests of the producer, the wholesaler, and the retailer were identical, such churns would not be returned to the farmer; since in the first place it is very difficult to wash and steam a churn properly when it has travelled, perhaps for 24 hours, before the washing takes place; and in the second place, there are many dairy-farms in the country on which the water-supplies are inadequate for this work.

TABLE V.—*Bacteriological Examination. Oct. 9th–Nov. 20th, 1919.*

Condition of churn.	Counts.	Acid and gas in litmus-lactose-peptone water.
Unwashed (whole milk present)	∞ in 1/100,000	+1/100,000
	4,000,000	+1/100,000
	∞ in 1/10,000	+1/10,000
Badly washed (milky water present)	18,400,000	+1/1000
	5,300,000	+1/1000
Apparently clean but wet	4,100,000	+1/100
	780,000	+1/10,000
	510,000	+1 c.cm.
Apparently clean and dry	6,200,000	+1/1000
	1,720,000	+1/10,000
	1,600,000	+1/100
	800,000	+1 c.cm.
	400,000	+1/1000
	35,000	+1/10
	15,400	+1 c.cm.
	6,500	—
	5,000	+1/10
	3,000	—
	2,400	—
	2,000	—
	170	—

Throughout this work it became clear that the proper methods of efficient washing and sterilisation were not understood within the milk industry, and the need for further knowledge on these subjects was more obvious still when visits were paid to milk depôts of various kinds, nearly all of which possessed steam but made use of it in an ineffective manner. Investigations were, therefore, carried out in order to establish the minimum times that are required for the sterilisation of milking utensils, especially milk-churns, for commercial purposes. That work has now been done by Hoy[7] and Mattick[8] and the times and conditions necessary for efficient sterilisation, either by current steam or by steam under pressure, have been established.

Conclusions.

Such is some of the work carried out at the Institute during the past five years which has established certain important facts. First, that the best produced commercial milk can maintain a bacteriological standard of less than 10,000 colonies per 1 c.cm. for at least 24 hours after milking, even under the conditions of cooling and transit which exist in this country at the present time. Second, that such milk maintains its sweetness at room temperatures for a period of time which averaged 6·2 days in the winter months and 3·3 in the summer months. Third, that milk of a very high degree of cleanliness can be obtained in an average cowshed if the right worker be employed and be given light, water, steam, and a covered milking bucket. Fourth, that much of the contamination of milk is due to utensils. Fifth, the conditions necessary for the efficient sterilisation of dairy utensils, whether by current steam or by steam under pressure, have been established.

These and similar investigations have been of use to the producers of Grade A (Cert.) and Grade A Milk in their work. They have promoted coöperation within the milk industry and have improved the methods of education in our dairy schools.

References.

1. THE LANCET, Sept. 24th, 1921, p. 662.
2. The Wastage of Milk, R. Stenhouse Williams, Journal of the Royal Agricultural Society of England, vol. lxxviii., 1917.
3. A Study of Two Types of Commercial Milk, K. Frecar, W. Buckley, and R. Stenhouse Williams, 1919, Camb. Univ. Press.
4. The Production of Clean Milk at Moundsmere Manor, Basingstoke, W. Buckley, 1917, Whittingham, Chiswick Press, London.
5. Factors Concerned in the Production of Clean Milk, Part I., E. G. Knight, K. Frecar, and R. Stenhouse Williams, 1920, Camb. Univ. Press.
6. An Inquiry Concerning the State of Cleanliness of Empty Milk Churns, A. F. Cumming and A. T. R. Mattick, Journal of Hygiene, xix., No. 1, July, 1920.
7. Report on a Simple Steam Steriliser, W. A. Hoy and R. Stenhouse Williams, June, 1921, Dairy Supply Co., London.
8. The Sterilisation of Empty Milk Churns under Pressure, A. T. R. Mattick, Journal of Hygiene, vol. xx., No. 2, October, 1921.

MENTAL DISEASE IN EX-SERVICE MEN: WORK OF THE MINISTRY OF PENSIONS.

THE care of soldiers and sailors who took part in the war and whose minds became affected during their service has been one of the most anxious tasks committed to the Ministry of Pensions, and one that has brought it into a cross-fire of criticism from many directions. We summarised recently (THE LANCET, Dec. 10th, p. 1232) some of the searching questions asked in the House of Commons upon the subject, briefly commenting upon the official answers and what lay behind them, and we are now in a position to state with official authority the provision for these unfortunate cases as it exists at the present moment. Separate provision is made for (*a*) cases of neurasthenia; (*b*) cases of severe neurasthenia, the so-called "borderline" cases; and (*c*) the certified insane.

Cases of Neurasthenia.

In the early days of the Ministry of Pensions, before the re-organisation of the medical services, the victims of war neuroses, so-called shell-shock and kindred ailments, were treated either in the special neurological hospitals of the army and navy or in hospitals managed by Local War Pensions Committees and Joint Disablement Committees acting as agents of the Pensions Minister. A small number of "Homes of Recovery" directly controlled by the Ministry also accommodated a certain number of pensioners suffering from neurasthenia. With the creation of the regional organisation of the Ministry, however, special neurological hospitals and wards of hospitals were established in each region. Hospital after hospital was taken over from the

army and from public bodies, and to-day the Ministry possesses accommodation in its neurological hospitals and wards for 167 officers and nurses and 3450 other ranks.

At the beginning much difficulty was experienced in securing the services of medical men specially qualified and experienced in modern methods of treatment of functional nervous diseases—for the war created a mass of neurasthenics quite out of proportion to the number of available experts in functional disorders; but by establishing a training school at Tooting for medical men interested in, and possessing some experience of, functional nervous diseases under the able direction of Dr. R. G. Rows, late c/o of the Military Hospital at Maghull, this difficulty was overcome. At Tooting some 68 men received systematic instruction in modern psycho-therapy. The neurological hospitals are now efficiently equipped and staffed; they possess ample garden space and in many cases farm lands, and there the treatment is directed, firstly, to curing the psycho-neuroses; and, secondly, by occupation selected after consultation between the medical officer, the chief training officer, and the patient himself, to preparing the latter for his return to outside conditions.

The usual occupations, each under expert instruction, include gardening, pig-keeping, poultry-farming, carpentering and cabinet-making, metal work, leather work, and boot-repairing. The proportion of patients usefully and happily employed for part of each day in the workshops and gardens of the neurological hospitals ranges from 30 to 40 per cent. to as much as 60 to 70 per cent. of the total number of patients. Accommodation is generally from 10 to 20 per cent. in excess of the number of beds occupied.

During the three months ended Sept. 30th, 1921, there were 399 discharged as recovered and 1003 discharged as relieved from Ministry neurological hospitals, giving a recovery and relieved rate calculated on the number admitted during the three months (2128) of 65·9 per cent.; or, calculated on the total number treated during the three months (5670), of 24·7 per cent. The out-patients treated at Ministry institutions during the same period gave a recovery and relieved rate of 63·8 per cent. calculated on the number admitted (3890); or, calculated on the total number of out-patients treated (11,576), of 21·5 per cent. The combined recovery and relieved rates for these three months were, therefore, 64·6 per cent. calculated on the admissions; or 22·5 per cent. calculated on the total numbers under treatment.

Borderline Cases.

The cases of officers and men suffering from psychoses attributable to, or aggravated by, war service and in whom the question of certification as insane arises, or may arise in the future, have always been regarded by the Minister with grave anxiety and concern. It has been, therefore, a cardinal principle to concentrate on these cases the medical resources of the Ministry in the hope of restoring health and averting certification, which latter is kept as a last resort. The Minister, as the law stands to-day, has, of course, no authority to treat officers or men properly certifiable as insane in any of his institutions, and the failure must be remembered of all attempts made to permit, with proper safeguards, the detention of mental cases likely to recover within a short time but requiring supervision, detention, and control. Clause 10 of the Miscellaneous Provisions Bill introduced last year by the Minister of Health was defeated.

For some time at the Maudsley Hospital and now at Ewell, in the case of other ranks, and also at Latchmere, in the case of officers, provision is made for the borderline class of case. These institutions are well equipped and staffed, and coupled with the neurological hospitals of the Ministry are ample for present needs. In addition to the in-patient accommodation referred to above, there are 56 neurological clinics, which, together with the out-patient departments of the neurological hospitals, afford treatment at the present time to 7664 out-patients.

Insane Ex-service Men.

Following conferences between the Statutory War Pensions Committee, the Asylum Authorities, the Board of Control, and the Ministry of Pensions, insane ex-service men whose mental disorder is accepted by the Ministry as due to, or aggravated by, war service are admitted to and treated in the ordinary mental institutions of the country—i.e., the county and borough asylums. No other course could have been followed and no other is even now advisable. The service patients, however, are placed on the legal footing of private patients at the cost of the Ministry of Pensions, and they are afforded certain other privileges (clothing of superior quality and 2*s*. 6*d*. a week for extra comforts). Further, by arrangement with the Board of Control the patients are visited by medical inspectors from the Ministry headquarters; and each man is interviewed and reported upon by these inspectors. In all other respects the service patients, other than ex-officers, are treated in exactly the same way as the ordinary inmates of these institutions. From the reports of the inspectors who have now interviewed over 5,438 patients in 120 asylums, the Minister is satisfied that the service patients are well cared for.

Numerous attempts have been made to discredit the conditions in the county and borough asylums, and by frequent reference to the "herding" of service patients with "pauper lunatics" to cast an unmerited stigma both on these excellent institutions and their inmates. It has even been stated that large numbers of men who are bereft of reason by their fighting service are "held in bondage" and their recovery prevented by being immured in asylums in which they should never have been placed. Such statements, whose only result can be to cause needless distress to the unfortunate relatives of service patients, are devoid of truth. The Minister's inspectors report that not one man has been interviewed who has been improperly certified as insane, and that the overwhelming majority is composed of cases of unfavourable character and prognosis, cases of original congenital defect, general paralysis, and dementia. Nevertheless, in a minority recovery, and in a larger number improvement permitting of discharge, is effected, averaging some 26·47 per cent. (recovered 17·41 per cent. plus relieved 9·04 per cent.). Prior to the war every million of male population between the ages of 20 and 44 years in England and Wales furnished 750 insane to institutions each year.

During the war, when so many millions of men were serving in the forces, there was a steady fall in admission to asylums, which immediately after the armistice began again to ascend, as shown by the following figures given by the Lunacy Commissioners:—

Admissions to Asylums in England and Wales.

Year.	Number.	Year.	Number.
1915	53,446	1919	41,727
1916	51,840	1920	42,428
1917	50,382	1921	44,004
1918	46,025		

Notwithstanding the obvious inference from these figures, and notwithstanding the opinions of medical superintendents of asylums, as, for example, that published by Dr. W. Robinson, of the West Riding Asylum,[1] showing that only 44 per cent. of the service patients in that asylum had served overseas in the firing line, and that "the service patients, as a class, would, as regards the majority, have been patients in mental hospitals sooner or later had there been no war," the Minister has extended the provisions of the Royal Warrants to practically every case of insanity arising during service or within a limited period after discharge, thus giving the ex-service man the benefit of any doubt that may exist.

The popular conception that all ex-service men in asylums are the victims of "shell-shock" is quite erroneous. This in no way, however, lessens the

[1] Service Patients in Mental Hospitals, by William Robinson, M.D., Senior A.M.O., West Riding Asylum, Wakefield. Journal of Mental Science, January, 1921.

sympathy with which each service patient is regarded, or diminishes the Minister's anxiety that the patient should receive the utmost care and most skilful treatment. The proposal that special asylums should be created solely for ex-service men has been much discussed. The general public, unversed in such matters, unaware that the first necessity for proper treatment is proper classification and segregation according to behaviour, conduct, and medical category, and that, therefore, treatment can only be properly carried out in institutions of sufficient size to permit separate wards according to classification, naturally fails to appreciate the necessity for institutions of considerable size and accommodation. Of this necessity, however, medical men are well aware. It would, therefore, be necessary, if popular demands are to be met, to create some 12 or more institutions for service patients placed at convenient centres.

Bearing in mind the indisputable fact that the service patients do not differ in medical category and conduct from the ordinary patients of asylums, and that as regards the great majority the prognosis is no more favourable than in their unfortunate fellow patients, the accommodation provided should be as complete in every detail as that provided for civil patients. The county and borough asylums with their separate wards varying in number from 8 to 20 on the male side; special electrical and X ray plants; isolation rooms and safety appliances; separate exercise courts according to class of case; laundry and workshops; garden and farm lands and buildings would all be required for a class of patient whose numbers should now be at their maximum and will necessarily steadily decline to zero in, say, 30 to 40 years' time. No one even superficially acquainted with the subject would propose temporary accommodation of the camp or hutted type as suitable for such cases. What, however, has been seriously proposed is the setting apart of selected county and borough asylums for service patients only. This proposal is not without its merits, but has the great disadvantage that it would necessarily, in a large proportion, probably the majority, of the patients, remove the patient so far from his relatives and friends that he and they would be deprived of one of their greatest solaces, the frequent and periodic visitation and intercourse.

Intermediate between these two proposals the setting apart of special blocks of existing asylums for service patients who no longer require strict supervision and who may enjoy and benefit by a greater degree of freedom, a more domestic type of surroundings and occupational treatment, and even vocational training, in fact a half-way house between the asylum and ordinary civil life, though remaining within the general asylum administration, has been under consideration for some time following the recommendations of the Departmental Committee of Enquiry into the Ministry of Pensions administration.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Anti-Tuberculosis Work in Austria.

IN order to inform medical practitioners of the available means of combating tuberculosis, the Board of Health has issued a small booklet containing all data concerning welfare institutes, hospitals, and sanatoriums devoted to the treatment of this disease. Three distinct groups of institutions exist for this purpose in Austria. First, there are the 43 so-called welfare centres, situated in the densely populated districts of Vienna and the larger provincial towns, and under the control of fully competent lung specialists, aided by two or more fully trained nurses. Their object is the dissemination of information to patients concerning hygienic modes of living, prevention of infection, assistance in procuring hospital beds in cases of necessity, and control of the convalescents in their homes. In numerous centres regular tuberculin courses are given to chronic cases not requiring hospital treatment. The second group consists of the 27 sanatoriums for internal or for surgical tuberculosis, situated in mountainous or hilly country districts esteemed for their equable climate. Altogether they contain a little over 3400 beds, with about 960 beds for children. Quite 50 per cent. of these institutions are owned by the State or the provinces, and are thus open to the poorer classes; the remainder are private, and conducted for profit. The majority are possessed of modern apparatus and appliances for physio- and mechano-therapy, including X ray and quartz-light plant; some of them are situated high up in the Alps, where the therapeutic effect of sunlight is utilised. The third group comprises about 5700 beds in hospitals, for both internal and surgical tuberculosis, for patients of both sexes and of all ages. In Vienna alone 3400 beds are available for this purpose; about 25 per cent. of all these beds can be used for children. The remainder of the beds are divided up between the hospitals in the country districts and provincial towns. Vienna contains about 30 per cent. of the entire population of the republic, but has 60 per cent. of the tuberculosis beds. In the whole country there are 89 public hospitals, with a capacity of 26,776 beds, and 124 private hospitals with 5706 beds, or a total of 32,482 beds, of which figure 18 per cent. are devoted to patients suffering from tuberculosis. This figure—18 per cent.—represents a not quite sufficient proportion of space allotted to tuberculosis.

Prohibition of Yellow Phosphorus.

The Austrian Republic has accepted the Convention of Berne, which prohibits the use of ordinary yellow phosphorus for the purpose of making matches. It is interesting to realise that it took 15 years for the provisions of this convention to be put into force in this country; only by means of the Peace Treaty was it possible to compel interested parties to accept this absolutely necessary public health measure. Only a few of the great factories have hitherto been wise enough to study the social welfare of their employees; now and then the students in the Vienna clinics have had the opportunity of observing a case or two of phosphorus-necrosis, but some 25 years ago the disease was so frequent here that Prof. Albert wrote a monograph on it, and showed cases to his students at every class. Strong feeling also exists here against the proposed prohibition of the use of lead in factories for paints and dyes; and with regard to the disinfection of raw wool imported into Austria the manufacturers of the country are again not quite as advanced as is desirable in matters of modern prophylactic medicine.

Dangerous Dental Fillings.

The attention of the medical profession, and especially of dental surgeons, has been called to the existence of dangerous compositions, widely advertised as a substitute for gold, for filling teeth and bridge and crown work. These alloys, consisting of copper and zinc, are similar in their constitution to tombac, but also contain lead, some even as much as 0·5 per cent. These metals are not as resistant to the action of alkaline or acid liquids as are the copper-gold alloys; they are therefore subject to constant dissolution under the influence of saliva in the mouth. Small quantities of lead are thus being constantly thrown into the system. Toxic conditions may result, and have been observed. The alloys have been widely used owing to the great difference in their prices when compared with those of copper-gold alloys.

Spectacular Hypnosis.

For some time past public demonstrations of "telepathy" and hypnosis have aroused much comment both in the lay press and in medical circles. Certain disagreeable consequences having followed in some cases, the Board of Health has thought it necessary to interfere, and has issued a report to the Ministry of Health with the request to instruct magistrates and other authorities who license public meetings that hypnosis and suggestion are to be considered as thera-

peutic agencies, the use of which should be regarded as permissible only to doctors of medicine. The substance of the report is as follows.

Public demonstrations of such a nature by non-medical men are always promoted from a financial standpoint, and constitute a nuisance. Permission to hold such demonstrations should not be granted, as they tend to upset the nervous systems of many spectators, and may cause severe harm, especially through the agency of the mediums who volunteer to help the demonstrator. If a lay person is licensed to give public demonstrations of telepathy and occult phenomena, there is always the danger that mercenary considerations may overcome his discretion; and criminal influence is not always beyond question. Occult phenomena have commanded widespread interest since, and perhaps on account of, the war. To be successful experiments always require increased susceptibility and suggestibility of the medium; they tend to cause nervous conditions in many persons, whereas it should be the object of public health officials to restore the nervous equilibrium of the population. Public feeling should therefore be roused against the exploitation of manifestations of nervous conditions not yet scientifically explained and detrimental alike to the individual and the community. This report, together with an order to stop all such exhibitions, has been circulated among municipal officials throughout the country. The actual bad effect upon persons predisposed to nervous instability has been observed in several instances brought to public notice in a couple of forensic cases during the last few weeks. Either crimes were attempted by means of hypnotic influence, or permanent ill-health was caused; in one instance the hypnotist was unable to rouse his medium from the trance, and the victim had to be taken to hospital.

Dec. 14th.

CANADA.

(FROM OUR OWN CORRESPONDENT.)

Public Health in Toronto.

Dr. Hastings, M.O.H., Toronto, recently announced the city's death-rate to be the lowest for some time, the rate for the last ten months being 11·3. Cancer and heart disease account for the largest number of deaths. The infantile mortality rate continues to be the lowest yet recorded. The principal cause of deaths was premature birth, a cause which will be reduced only by increasingly intelligent care of the mother during pregnancy. An alarming increase in the number of cases of diphtheria is shown in the November report of the Provincial Board of Health. There are 940 cases of this disease throughout the province, as compared with 55 cases for November last year; while the death-rate is 82, as compared with 43 in the corresponding period in 1920. The disease is not so prevalent in Toronto as in outside centres. It is said to commence in a mild form in those it attacks and later to increase in virulency. The Board of Control of the city of Toronto recently voted an additional $7500 to enable the Department of Health to continue its work in social welfare until the end of the year.

University News.

The popularity of the graduate courses held by the Faculty of Medicine of the University of Toronto last December and May has led to arrangements being made to hold similar courses this month. Provision has been made for a course in surgery, one in medicine, and one in gynæcology and obstetrics, to be run concurrently from Dec. 19th to 24th. Under this arrangement it will be possible for a candidate to avail himself of more than one course. The courses will be limited to a registration of 60. It is considered that a week's concentrated work in a large hospital will produce better results than it is possible to obtain in the extension lectures which are now being given throughout the province by the Faculty of Medicine.

Prof. William Bateson, F.R.S., Director of the John Innes Horticultural Society, Merton Park, Surrey, England, will give five lectures on Genetics and Heredity in the medical building of the University of Toronto in the early part of January, 1922. The University of Toronto Memorial Loan Fund applications for funds to enable returned soldier students to continue their courses may total 189, as announced recently by the Alumni Scholarship Board. Already 122 applications have been recommended. The Faculty of Medicine is applying for 55 loans for a total of $10,535.

Results are now coming from the generous gifts made to the University for the furtherance of the study of medicine by Sir John Eaton and the Rockefeller Foundation. Sir John and Lady Eaton have donated $500,000 to the University to be paid in 20 annual instalments. The gift from the Rockefeller Foundation is a million dollars.

The Medical College of the Western University, London, Ont., was formally opened recently by Dr. Grant, Minister of Education for the Province of Ontario. The building was erected and equipped at a cost of over half a million dollars.

Beri-Beri in Labrador.

Dr. Wilfred T. Grenfell, Labrador, Canada, at a recent address before the Empire Club, Toronto, Canada, spoke of the campaign against beri-beri, a form of sleeping sickness prevalent in the isolated districts of Labrador, where the food consumed is chiefly fish diet. Dr. Grenfell is at present in Canada conducting a campaign to raise funds for the hospitals, schools, and orphanages he has established on the Labrador coast.

Prescriptions for Liquor.

Chief Inspector J. N. McLean stated recently that only 10 per cent. of the physicians practising in Manitoba issue their limit of 100 prescriptions for liquor each month. If all the doctors prescribed their allotment, 68,300 orders for liquor would have been filled by drug stores, whereas about 14,000 prescriptions are actually issued.

ROYAL MEDICAL BENEVOLENT FUND.

AT a meeting of the Committee held on Dec. 13th 28 cases were considered, and £378 10*s.* voted to 25 of the applicants. The following is a summary of some of the cases relieved:—

Widow, aged 63, of L.R.C.P. & S., who practised at Credbury Mortimer, London, was latterly a surgeon on a Union Castle boat and died this year. Applicant is left quite unprovided for, suffers badly from rheumatic gout, and is unable to earn her own living. She receives £5 interest from War Loan and has sold various articles to pay her way. From Dec. 31st, 1921, the steamship company have granted her £50 for two years. At present her rent is 30*s.* per week for two rooms. Voted £10 in two instalments.

M.R.C.S. Eng., aged 59, who practised at Penarth up to 1892. Through paralysis had to give up practice. He now has to pay £2 2*s.* per week for attendance, board, and lodging, and his only income is an annuity of £72 3*s.* per annum and £35 from friends. A son, who used to help, died in 1918, and a brother, who formerly allowed a small sum, is unable to continue help. Voted £26 in 12 instalments.

Daughter, aged 78, of M.R.C.S. who practised at Southsea and died in 1884. Applicant's income is derived from investments amounting to £30 and £50 from nieces and a nephew. Her sister who died recently was in receipt of an annuity from the Fund. Applicant's rent is £41 per annum. Voted £18 in 12 instalments.

Widow, aged 57, of M.B. Aberd. who practised at Regent's Park and died in 1910. Owing to ill-health applicant is unable to earn her own living and at present she is only in receipt of 30*s.* per week from a daughter. Voted £5.

M.B. Edin., aged 56, who practised at Milnathort. Owing to deafness he had to give up his practice and recently has been working as a gardener, but has found the work too heavy. He is now dependent on an unmarried sister whose means are insufficient for two people. Voted £26 in 12 instalments.

Subscriptions may be sent to the hon. treasurer, Sir Charters J. Symonds, at 11, Chandos-street, Cavendish-square, London, W. 1.

INFLUENZA EPIDEMIC IN ROSSENDALE.—Owing to the prevalence of influenza in the Rossendale Valley the schools in Rawtenstall have been closed. Other parts of the district are also affected.

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH

BLACKBURN.

Dr. W. Allen Daley submits an interesting report, and mentions as the outstanding features of the year: (1) the lowest general death-rate (12·7) ever recorded in the town; (2) the lowest death-rate from tuberculosis (0·79); (3) extension of maternity and child welfare work; (4) inauguration of work with the object of educating the public on health matters; (5) progress, howbeit slow, with the erection of municipal houses. The Registrar-General's estimate of the population for 1920 is 131,012, but Dr. Daley, from various sources of information, thinks this figure too low, and adopts an estimate of 140,000. The provisional census returns apparently justify Dr. Daley's expectation that the census taken in June will swell the populations of holiday resorts like Blackpool at the expense of industrial towns like Blackburn. The staple industry of Blackburn is cotton spinning and weaving, and a noteworthy social feature is the extensive employment of female labour. At the census of 1911 there were 18,372 female weavers, 9448 of whom were married. There are a very large number of bottle-fed babies, and a high infant mortality rate—viz., 110 in 1920, as compared with 85 in the 96 great towns. Dr. Daley draws attention to the high neo-natal mortality. Thus of 311 infant deaths, 104 took place under one week, and 155 under one month. The maternal mortality from childbirth is also, Dr. Daley tells us, far too high, having been 5·9 and 5·6 per 1000 births for 1919 and 1920 respectively, as compared with 4·12 per 1000 births for England and Wales in 1919. There is a low birth-rate, which rose from 14·0 in 1919 to 20·1 in 1920. Dr. Daley has a good deal to say about the smoke nuisance, and instances Pittsburg, U.S.A., as an example of what can be done. He adds that there are 190 factory chimneys on the register; 92 are provided with smoke-consuming appliances, including five installed in 1920. Smoke observations, each of an hour's duration, were taken on 155 occasions. Twenty-eight chimneys emitted black smoke in excessive quantities. This means that many factories in Blackburn are continually breaking the law as regards the black smoke nuisance. There is no mention of any legal proceedings. We hope Dr. Daley will be successful in inducing his authority to start a really vigorous campaign on this question.

WIGAN.

Dr. Fred E. Wynne states in a farewell report as M.O.H. for Wigan that the estimated population for 1920 was 90,866; the birth-rate 30·61; the corrected death-rate, 15·92; the infant mortality rate, 124; the death-rate from pulmonary tuberculosis, 0·83, and from other tuberculous diseases, 0·19. Dr. Wynne points out that the reduction in the general death-rate still leaves it considerably in excess of that of the 96 great towns, and that the infant mortality rate is "still far from satisfactory." He is glad to report the resumption of the privy-conversion work. There are still over 1500 to be dealt with. There are two infant clinics; and Dr. Wynne points out that a large number of cases are referred to private practitioners, and is convinced that "the clinics, so far from competing with private practitioners, must considerably increase their clients." Dr. Wynne combats the idea that milk has been given away indiscriminately, and points out that in every application for free milk the applicant has to bring a wages statement signed by the employer. An interesting diagram showing the relation between the incidence of tuberculosis and the percentage of insanitary houses in each ward of the borough is given. Dr. Wynne notes that the results will be disconcerting to those who believe that in re-housing alone will be found the solution of the tuberculosis problem. Lindsay ward, with the highest general death-rate and the highest percentage of insanitary houses, has the lowest incidence of tuberculosis, while St. Patrick's ward, with the lowest percentage of insanitary houses, has the highest incidence of tuberculosis. Dr. Wynne explains this anomaly by the large proportion of Irish people resident in St. Patrick's ward, and expresses his belief that the Irish are susceptible to tuberculosis, and that the Western Celts and their descendants born in England do not as a rule adapt themselves readily to urban and industrial conditions. For the rest, the incidence of tuberculosis is highest in the centre of the town, and the moral is to get the people away from this centre. Dr. Wynne approves Miss Octavia Hill's system, and calls also for help in putting a stop to the pollution of the atmosphere by smoke, both domestic and industrial, and a more rigorous isolation of advanced and highly infectious cases of the disease.

As school medical officer, Dr. Wynne records the most important event of the year—the beginning of dental inspection and treatment, and includes in his report an appeal addressed by the school dentist, Mr. Townend, to parents on the importance of the care of their children's teeth. With regard to verminous conditions, Dr. Wynne makes the suggestion that the course of "nature study" given in the schools should include demonstration on the life-history of the louse. No progress has been made with the provision of the new school clinic, for which plans have been completed and which is urgently needed.

SCHOOL MEDICAL SERVICE.

BRISTOL.

THIS university city has an average school attendance of 50,000, half of whom pass annually through the doctor's hands. Of 18,603 who underwent routine examination, 576 were found to be suffering from anæmia, 397 from organic heart disease, 475 from malnutrition, and 4417 from defective vision. There were 59 cases of definite and 151 of suspected pulmonary tuberculosis. Nose and throat defects accounted for 2916, ear disease for 254, and defective hearing for 398. The great majority of these ailing children were treated at the school clinics. An increase of 59 per cent. is reported in the clinic cases which, the report states, would be untreated were it not for the authority's scheme of treatment. These cases consist for the most part of chronic ailments. Only five out of 1452 children failed to get the spectacles prescribed for them. One special school has a clinic on the premises, an especially helpful arrangement in the case of physically defective children who travel with difficulty. The staff of the school medical department has been strengthened by the appointment of specialist officers and work in the secondary schools has begun. There are, so far, no nursery schools, but classes for children with defective sight and defective hearing are at work. Yet the stable-door is still unlocked, for the authority has not yet seen its way to arrange for treatment for children below school age, and as Dr. R. A. Askins states in his report, the majority of crippling defects start before this age. Scabies is rapidly on the decline, but impetigo remains high. It would be of interest to correlate this latter disease with nutrition. Infectious diseases ran rather high, but Bristol is quite up to date in its method of dealing with these; one school only was closed. The statement made in this report that head measurements and mental capacity are not related cannot be definitely determined from the figures set forth here; these might have been influenced by age distribution, and they are, moreover, at variance with the extensive recent investigations of Berry and Porteus.

KENT.

Dr. Alfred Greenwood's report on the school medical work in Kent shows steady effort with corresponding progress. The closest coöperation exists between the public health and the school medical services, the infant welfare centres being under the school medical

officer of the district. The nurses, too, undertake the whole of the health work in the area allotted to them, including the following up of ailing children. In this they are assisted to a limited extent by the Society for the Prevention of Cruelty to Children and the local committees dealing with infant welfare work. Minor ailments are treated at the school treatment centres, but diseases not coming under this heading are attended to by the school nurse at the instance of the general practitioner in charge of the case. There is one experimental nursery school in the county. A thorough investigation into the school furniture in use in schools has been held, but unfortunately few recommendations for its improvement were suggested. Dr. Greenwood believes that even if a fresh start could be made any scheme adopted would still remain imperfect, and to some extent experimental. Analysing the seating accommodation for 24,311 children, he reports that 7000 had seats without backs, and 2000 had chairs and tables. He is not quite satisfied that tables and chairs are the right thing for children, and, as a matter of fact, experience has shown that, wherever tables have been introduced, except for infants, they have been replaced later by more specialised furniture. The modern tendency to revert to tables and chairs for older children is a temporary phase, and sooner or later the desk will reassert its superiority.

Dr. Greenwood admits the great importance of good lighting, but records that his personal view is that bad lighting has not yet produced a case of eye disease. This may be so, but the fixation of the eye required in bad light is an urgent cause of eye-strain. In an eye predisposed to myopia this strain certainly aggravates the diseased condition. Eight per cent. of the school population in Kent suffer from defective vision, and 2 per cent. from squint.

An analysis of the ages of children suffering from diagnosed or suspected tuberculosis showed that, excluding disease of the glands, there was no difference in the numbers at the ages of 8 and 14 respectively.

SWINDON.

Out of 2632 children examined, 213 were found to have defective vision, 279 enlarged tonsils, 61 of these requiring active treatment. Only one case of rickets occurred, and there was no definite pulmonary tuberculosis. Dental examination of 2120 children revealed 17·3 per cent. with carious teeth; 1000 of these children received treatment under the local authority's scheme. Dr. Dunstan Brewer, successor to Dr. W. F. J. Whitley, reports that for years past Swindon has remained comparatively free from acute poliomyelitis, but that, on the other hand, rheumatism is a common disease, and cardiac cripples are numerous. Four cases of organic heart disease were discovered at medical inspections. Dr. Brewer looks upon diphtheria as "the great killing disease among children of school age," and is of the opinion that the school teacher is much more likely to be the carrier than are the children; he suggests that when throats are being swabbed the teacher should not be forgotten. Commenting on voluntary help, it is stated that the need has been lessened considerably, and that voluntary workers, forming children's care committees and so forth, were now less essential to success than when school inspection was first inaugurated.

The coöperation between the school medical service and local infant welfare work is so close that it is hoped shortly to have a continuous health record of each child between birth and the age of 16.

DONATIONS AND BEQUESTS.—The Manchester Royal Infirmary has received £1000 from the late Mr. Marcus Morreau for the endowment of a bed, a bequest of £100 from the late Mr. Joseph Milnthorpe, and £250 from the late Mr. Joseph Stanier. Donations from Salford and Glossop and from employees of various firms reached £345, while the Manchester Ship Canal Company have increased their annual subscription from £25 to £100. The subscriptions and donations to the Manchester Children's Hospital during the past month reached £816, including £500 from Messrs. Peel and Co., Ltd.

Correspondence.

"Audi alteram partem."

ORGANISATION OF MEDICAL EDUCATION: OPHTHALMIA NEONATORUM.

To the Editor of THE LANCET.

SIR,—Mr. J. Herbert Parsons, in your columns last week, drew attention to the inefficiency of the present curriculum in teaching the medical student how to cope with ophthalmic conditions, more particularly ophthalmia neonatorum. The Metropolitan Asylums Board have established a special hospital for this disease — namely, St. Margaret's, Leighton-road, Kentish Town. Last year rather less than one-third of the cases which occurred in the London area were received at this institution. A large percentage were blind on admission from corneal ulceration owing to inefficient or want of early treatment. Indeed, the average day on which they were admitted to the hospital was the ninth. One can only put this down to ignorance on the part of the midwife or doctor attending the cases, as if they had been educated in the natural history of the disease during their curriculum this would not have occurred. In 1920 the Ophthalmological Society of the United Kingdom passed the following resolution:—

"In passing a vote of thanks to the Metropolitan Asylums Board for permission to visit St. Margaret's Hospital, this meeting of the Ophthalmological Society wishes to urge on the Board, now that so large a number of cases of ophthalmia neonatorum are congregated together in one institution, that facilities should be afforded at their hospital for the teaching of medical students, midwives, and district nurses the natural history and treatment of the disease."

As the result of this the Metropolitan Asylums Board gave permission for St. Margaret's Hospital to be used for the purpose of teaching, and all the examining bodies were informed both of the resolution and the permission given by the M.A.B., but so far no advantage has been taken of the facilities so offered. I am, Sir, yours faithfully,

Harley-street, W., Dec. 26th, 1921. M. S. MAYOU.

INTERPOSITION OPERATION FOR VAGINAL PROLAPSE.

To the Editor of THE LANCET.

SIR,—Last year you published[1] a lecture I had delivered at the Royal Society of Medicine on the surgical treatment of prolapse of the uterus and vagina. In this lecture I made the following statement in regard to the interposition operation:—

"Schauta, to whom the introduction of this operation is attributed, lost five cases in 89 operations, and in 13 cases there were recurrences. Fothergill, commenting on these figures, justly remarks that 'no results could be much worse than these.' Bissell has reported an almost incredible mortality of 75 per cent., while Vineberg[2] states that 'I abandoned it (interposition operation) myself on account of the extensive suppuration usually accompanying it.'"

I explained in another part of the lecture how sepsis can be entirely prevented. When I was in America this year I met Dr. Bissell, with whom I discussed the matter. He then told me he had not made any such statement as that attributed to him; for, like myself, he had never had a death following the interposition operation. This information was so contrary to what I had quoted in my lecture that I asked him to make some inquiry into the matter. I have just received from him a letter enclosing one from Dr. Vineberg, which explains how the mistake has arisen. I shall be very glad, therefore, if you will publish these letters, which I enclose, as I greatly

[1] THE LANCET, 1920, i., 993.

[2] Vineberg, H. N., Amer. Journ. Obstet. and Gynecol., 1919, lxxix., 677.

regret having given currency in this country to what turns out to be an untrue statement published in the United States regarding the work of a charming and conscientious American colleague.

I am, Sir, yours faithfully,

Liverpool, Dec. 20th, 1921. W. BLAIR BELL.

ENCLOSURE.

Copy of a letter from Dr. Dougal Bissell, 219, West 79th-street, New York, dated Dec. 1st, 1921.

MY DEAR DR. BELL,—I am sending you a letter received from Dr. Vineberg on the question of my "75 per cent. mortality" in the operation of interposition of the uterus for the cure of procidentia uteri, cystocele, &c. The letter speaks for itself, and I would be greatly obliged if you would have the error in your article, which, as you appreciate, places me in a most uncomfortable position, corrected in THE LANCET. A few words from you would be to a better purpose than any public statement I could make. The simple fact is that I have done comparatively few interposition operations, but I have never had a death, nor do I know of a death following this operation in the hands of any of my friends.

Cordially and sincerely yours,

(Signed) DOUGAL BISSELL.

Copy of a letter from Dr. Hiram N. Vineberg to Dr. Dougal Bissell, dated Nov. 23rd, 1921.

DEAR DR. BISSELL,—In your letter of the 11th instant you draw my attention to a quotation by Dr. Blair Bell, in a paper in THE LANCET from a statement I made, in a discussion of a paper by Dr. George Gray Ward, Junr., on the problem of cystocele in the *American Journal of Obstetrics and Gynecology*, 1919, lxxix., p. 677. I stated you had a mortality of something like 75 per cent. in following the method described by F. F. Simpson of reducing the size of the uterus when it was too large to be adaptable for interposition, and that you had abandoned the method as well as I had myself, on account of the dangerous suppuration that attended it.

I made the statement in good faith, having in mind the paper entitled A Subtotal Hysterectomy, &c., I heard you read at the meeting of the American Gynecology Society held at Pittsburgh, Pa., May 31st, June 1st and 2nd, 1917. My recollection of it was that in seven cases you had five deaths. This was firmly imbedded in my memory, as it was in that of another colleague who heard your paper and to whom I have spoken on the subject recently.

Since receiving your letter I have, for the first time, read your paper as published in the Transactions of the Society for the year 1917. I saw then how I must have gained the erroneous impression. In it you state than in seven cases the indications for the operation were fibroid of the uterus, procidentia, and cystocele. That evidently impressed me as the number of cases in which the uterus was enlarged, and its reduction in size indicated. Further, you state that serious infection occurred in five of the cases.

Through faulty hearing, enhanced by poor acoustics, which most of our meeting rooms have, I must have understood you to state that you had had five deaths in the series in which the uteri were enlarged by fibroid condition, and had to be reduced in size. Of this I am certain, I carried away with me the idea that out of seven cases you had had five deaths. Hence the statement of something like 75 per cent. mortality.

But on a careful reading of your paper I find that the operation had been performed upon 34 cases and that in the series there were five serious infections with only one death. The mortality rate, therefore, for the entire series was only 3 per cent. instead of the "something like 75 per cent." I am greatly chagrined with myself for the egregious misconception I gained from listening to the reading of your paper. Please accept my most sincere apology for the error and for the injustice unwittingly done you. It shows very forcibly how unsafe it is to rely solely upon conceptions gained from hearing a paper read. As far as I know it is the first time my hearing has played me such an unfortunate trick.

I can only say the incident has taught me a very striking lesson, from which I hope to benefit in the future. I sincerely hope my confessed and deeply regretted error will receive as much publicity as the original statement.

Very sincerely yours,

(Signed) HIRAM N. VINEBERG.

INFECTIOUS DISEASE IN MAURITIUS.

To the Editor of THE LANCET.

SIR,—With reference to the notes on "Influenza in Mauritius" in THE LANCET of Oct. 1st, Mr. A. F. Fokeer is wrong in exonerating the Indians from a share in the insanitary condition of the island. The majority of the Indian population of Mauritius are coolies, with no idea of sanitation whatever. On the sugar estates they live in thatched huts built in crowded "camps." There is no drainage; the water-supply is taken from the nearest polluted stream and conveyed to the estate in open canals, in which soiled linen is washed and in which every one bathes as he pleases. On the estate the water is distributed by means of smaller open canals, which also serve the purpose of open sewers.

This was the state of affairs on sugar estates when I lived in the island many years ago, and I am told that things are still in the same condition. In the smaller towns and villages the same conditions obtain, and even Port Louis, the capital, is notorious for its evil smell, especially in the slums, though of late some efforts have been attempted to improve matters. Port Louis and Curepipe, however, have a good water-supply.

The Board of Health of the island imposes stringent regulations regarding the vessels that visit the island from foreign countries, especially India, but the antiquated measures adopted to deal with infected ships are the talk of the shipping world. Epidemic disease in any port of the world seldom fails to visit the island in its worst form. At present, it appears, there is an epidemic of enteric fever.

I am, Sir, yours faithfully,

C. L. D'AVOINE, M.D. Brux.

Byculla, Bombay, Oct. 21st, 1921.

Obituary.

JOHN ELLIOTT, M.D., B.S., F.R.C.P. LOND., F.R.C.S. ENG., B.SC.,

CONSULTING PHYSICIAN TO THE CHESTER ROYAL INFIRMARY.

LAST week we recorded the untimely death of Dr. John Elliott, who occupied a distinguished position as physician-consultant in Chester and North Wales. Born in 1861, Dr. Elliott was educated at Owens College, Manchester, and St. Bartholomew's Hospital, and graduated in two faculties of the University of London, becoming B.Sc. with honours in 1880 and M.B., also with high honours and a gold medal, in 1885; he also obtained the gold medal in the examination for the B.S. in 1886. Dr. Elliott proceeded further to equip himself with the highest qualifications open to a member of the profession in both of its main branches, being elected to the Fellowship of the Royal College of Physicians of London (1886) and that of the Royal College of Surgeons of England (1908). He held the post of house surgeon at his teaching hospital, and then became resident surgical officer at the Birmingham General Hospital. He was later elected a physician on the staff of the Chester Royal Infirmary, and then settled permanently in consulting practice in Chester. His advice was eagerly sought throughout North Wales, and he was always a source of help to his junior colleagues at the Chester Royal Infirmary. Dr. Elliott's services to the community were not confined to his medical activities. He was a member of the Chester City Council from 1895 to 1898, and from 1913 he was a member of the Commission of the Peace for Chester, while he was an active member of the Chester Agricultural Society. During the war Dr. Elliott rendered valuable services, and for this work he received the O.B.E. His recent protest made in the High Court against the disclosure of confidential information in certain circumstances, as between patient and doctor, will be fresh in the memory of many of our readers. He took a keen interest in the applications of optics to colour photography, in the practice of which he was an adept artist. In him the medical profession has lost an accomplished and all-round exponent of our science and art.

HARRY LITTLEWOOD, C.M.G., F.R.C.S. ENG.,

LATE PROFESSOR OF SURGERY IN THE UNIVERSITY OF LEEDS; LATE LT.-COL., R.A.M.C.

IT is with great regret that we record the death in his sixty-first year of Colonel Littlewood, which took place suddenly at Erpingham Lodge, Aylsham, Norfolk. At the age of about 53, Mr. Littlewood found the demands of an extensive consulting surgical practice too much for his strength, and he decided to retire and to settle in his native county of Norfolk, where he had purchased a small estate and where it was hoped that, fond of country life as he was, he would have many years to enjoy his well-earned retirement. This was about 16 months before the outbreak of hostilities and the war saw him back at once at the scene of his former labours, for he had in 1908 accepted a commission as Lieut.-Col. in the R.A.M.C.(T.) on the staff of the Second Northern General Hospital. Acting first as officer-in-charge of the surgical section, and very soon as Administrator in succession to Colonel Dobson, whose serious but happily temporary illness laid him aside for some time, he stuck to his work till, after the peace, the hospital was transferred to the Ministry of Pensions. Then for the second time he left Leeds, having during the strenuous years of the war shown marked powers of organisation, the keystone to a life of great usefulness.

Trained as a student at University College, London, where he was awarded the Atkinson-Morley scholarship in Surgery, he took the Fellowship of the Royal College of Surgeons of England, and was elected resident surgical officer to the General Infirmary at Leeds in 1886. From the beginning of his career in Leeds it was clear that he was destined to make his mark. He at once became popular with the staff, with his resident colleagues, and with the students, to the instruction of whom he devoted much time. Many improvements in dressings and in surgical technique owe their introduction to the Infirmary to his initiative, and the position of resident surgical officer was never more worthily filled than during his tenure of office. Shortly after he left the Infirmary and started as a consultant in surgical work he was elected assistant surgeon to the Infirmary. This was in the year 1890; after six years on the assistant staff he was promoted to the full staff and had charge of beds for 17 years. Though he had not felt able to complete the term of 20 years, which in Leeds is the limit imposed upon the members of the full staff, he was, on the recommendation of the Board, elected a consulting surgeon by the managers of the Infirmary. He received the honorary degree of M.Sc. in the new University of Leeds, and later was appointed Professor of Surgery.

One who knew him well, was one of his resident colleagues, and was closely associated with him throughout the whole of his life in Leeds, writes as follows: "As a teacher Littlewood was eminently successful; his knowledge was extensive and sound, his mind was clear and logical, his sympathies were wide and sincere. It was no wonder that he was popular with the students and that they trusted and respected him. He brought to bear upon his surgical work those gifts of skill, patience, judgment, and humanity which are all essential for true greatness in surgery. I would venture to say that his chief characteristics as a surgeon were indomitable perseverance, reasonable optimism, and imaginative faculties regulated and restrained by wise caution. Trusted by those who called him in consultation, he soon developed a large consulting practice, and he maintained and increased the reputation for surgery which has been enjoyed by Leeds for so many years. As a man he was absolutely straight, loyal to those with whom or under whom he worked, as well as courteous and fair to those who worked under him. His death leaves a blank in the minds of a large circle of friends both in the profession and among the members of the general public. He served the Infirmary and the University with single-minded honesty of effort and placed both institutions under a deep debt of gratitude."

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surgn. Lieut. H. F. Stephen to be Surgn. Lieut.-Comdr.

The following appointments have been notified:—Surgn. Comdrs.: F. C. B. Gittings to *Repulse*; H. P. Jones to *Victory*, addl., for R.N. Barracks, Portsmouth; A. H. H. Vizard to *Dryad* (Navigation School); S. Roach to *President*, addl., for R.N. College and Hosp. School, Greenwich; R. S. Osborne to *Orion*; P. H. M. Star to *President*, addl., for R.N. Recruiting H.Q.; N. H. Harris to *Crescent*, for Rosyth Dockyard; L. M. Morris to Woolwich (temp.); W. E. Gribbell to *Vivid*, for Devonport Dockyard; W. H. Hastings to *Inconstant*; W. H. Pope to *President*, addl., for recruiting duties, Southampton; R. J. Mackeown to *Vernon*; and D. H. C. Given to *Victory*, for R.N. Barracks, Portsmouth, on technical staff of Commander-in-Chief, as Naval Health Officer.

ROYAL ARMY MEDICAL CORPS.

J. O Cuthbertson, late Capt., R.A.M.C., T.F., to be Temp. Capt.

Maj. R. J. Cahill relinquishes the actg. rank of Lt.-Col.

Capt. C. H. Stringer relinquishes the temp. rank of Maj.

Temp. Capts. relinquishing their commns. and retaining the rank of Capt.: H. P. Hodge and H. J. Brink.

TERRITORIAL ARMY.

Capt. P. B. Spurgin to be Maj.

Maj. F. G. Hobson to be Lt., and relinquishes the rank of Maj.

Capt. R. L. Williams, from 5th Bn., Welch R., to be Capt.

Capt. W. A. Robertson, from T.A. Res., to be Capt.

Lt. A. S. L. Malcolm to be Capt.

Lt. J. Bowen-Jones (late R.A.M.C.) to be Lt.

Capt. M. T. G. Clegg resigns his commn. and retains the rank of Capt.

The undermentioned officers, having attained the age limit, are retired and retain their rank except where otherwise stated: Lt.-Cols. C. A. Goullet, J. W. Nicholson, and D. Smart (granted the rank of Col.), with permission to wear the prescribed uniforms. Majs. J. Cameron, V. Graham, D. A. Hughes, J. P. Brown, S. F. Barber, H. Stallard, and R. P. Ryan. Majs. (Bt. Lt.-Col.) H. W. Laing and P. B. Spurgin (retain the rank of Maj.). Capts. (Bt. Maj.) A. A. Jubb and A. Ricketts (granted the rank of Maj.). Capts. T. N. Thomas, J. R. Garrood, F. F. C. Jagger, R. L. Wood, H. W. Godfrey, T. R. W. Atkins, G. Higginson, and J. A. Parsons.

Capt. J. M. Kirkness relinquishes his commn. and retains his rank.

Supernumerary for Service with O.T.C.—Capt. A. E. Webb-Johnson, from Genl. List, R.A.M.C., T.A., to be Maj. for service with the Med. Unit of the Lond. Univ. Cont., Sen. Div., O.T.C.

ROYAL AIR FORCE.

The undermentioned Flight-Lieuts. are granted permanent commns.: W. F. Wilson, P. A. Hall, H. B. Troup, E. G. O'Gorman, and T. J. X. Canton.

INDIA AND THE INDIAN MEDICAL SERVICE.

Maj. S. S. Broome, professor of surgery, and Maj. J. J. Harper Nelson, professor of materia medica, have each been granted eight months' combined leave. Dr. H. Roberts has been appointed temporarily as Civil Surgeon, Khasi and Jhantia Hills, vice Maj. L. B. Scott, granted leave. Lieut.-Col. H. M. Mackenzie, of the Medical College, Lahore, has been granted one year's leave, and Lieut.-Col. F. A. F. Barnado, of the Medical College, Calcutta, four months' leave. Maj. E. C. Hodgson officiates as Assistant Director-General, I.M.S., at Simla.

ROYAL INSTITUTE OF PUBLIC HEALTH.—The annual Congress will be held at Plymouth from May 31st to June 5th. Lord Fortescue will preside and the Congress will be conducted in four sections:—Sect. I., State Medicine and Municipal Hygiene. President: Dr. D. Llewelyn-Williams. Sect. II., Naval, Military, and Air. President: Surgeon Rear-Admiral Sir Daniel McNabb. Sect. III., Bacteriology and Biochemistry. President: Prof. J. Martin Beattie. Sect. IV., Women and Public Health. President: Lady Astor. The Harben lectures will be delivered during the meeting by Dr. T. Madsen, Director of the State Serum Institute, Copenhagen. Further information may be obtained from the offices of the Institute, 37, Russell-square, London, W.C. 1.

Medical News.

UNIVERSITY OF CAMBRIDGE.—At the Third Examination for Medical and Surgical Degrees, held recently, the following candidates were successful:—

Part I., Surgery, Midwifery, and Gynæcology.—L. H. Bartram, W. T. Beswick, T. A. Butcher, S. P. Castell, R. S. Corbett, N. R. Cunningham, E. Donaldson, J. G. Drew, W. F. Eberlie, H.V. Edwards, A. A. Gemmell, L.B. Hartley, C.B. Hawthorne, J. B. Leather, W. B. A. Lewis, A. G. F. McArthur, C. F. McLean, B. Mountain, R. W. Nichol, R. P. Powell, A. A. Prichard, A. E. Roche, J. C. Russell, H. Spibey, and R. R. Traill.

EXAMINATION FOR THE DEGREE OF M.CH.

R. St. L. Brockman.

UNIVERSITY OF LONDON.—At examinations held recently the following candidates were successful:—

M.D. EXAMINATION.

Branch I., Medicine.—Laurence Ball (University medal), Birmingham University; Loswel I. Braun, St. Bart.'s Hosp.; Nora A. Crow, London Sch. of Med. for Women; Edward E. Lightwood and Frank Portas, Westminster Hosp.; Walter M. A. Rahman, Univ. Coll. Hosp.; Noel O. Richards, London Hosp.; Ernest W. Wade, Univ. Coll., Bristol; and Charles H. Warner, Middlesex Hosp.

Branch IV., Midwifery and Diseases of Women.—Margaret M. Basden, London Hosp.; Simeon M. Cohen, Univ. Coll., Cardiff, and St. Bart.'s Hosp.; Janet McAllister McGill, (University medal), London Sch. of Med. for Women and St. Mary's Hosp.; Percival G. Quinton, Univ. Coll. Hosp.; Elisabeth H. Schwab, London Sch. of Med. for Women; and Raymund Theron, London Hosp.

Branch V., State Medicine.—George W. Shore, King's Coll. Hosp.

Branch VI., Tropical Medicine.—Charles T. Maitland (University medal), St. Bart.'s Hosp. and London Sch. of Trop. Med.

M.S. EXAMINATION.

Branch I., Surgery.—Ranald M. Handfield-Jones, St. Mary's Hosp.; and Walter Salisbury, Bristol University and London Hosp.

A course of six public lectures on the Current Work of the Biometric and Eugenics Laboratories will be held at the University of London on Wednesdays in February and March, 1922, at 8 P.M. On Feb. 15th Prof. Karl Pearson, F.R.S., will lecture on Side-lights on the Evolution of Man: from the Knee-joint; on the 22nd Miss Ethel M. Elderton, Galton Research Fellow, will lecture on the Inheritance of Intelligence; and on March 1st Dr. Percy Stocks will discuss a Scheme of Anthropometric Measurements in the Biometric Laboratory. The Relation of Caries in the Teeth of School Children to Health and Home Conditions will be dealt with by Miss E. C. Rhodes on March 8th; Dr. Julia Bell will speak on the Inheritance of Certain Types of Blindness; and the closing lecture of the series will be delivered on March 22nd by Dr. M. Greenwood on Occupational Mortality. The lectures are open to the public without fee, but as only a limited number of seats are available, admission will be by numbered ticket for each lecture, for which application should be made to the Secretary, Galton Laboratory, University College, London, W.C. 1.

UNIVERSITY OF ABERDEEN.—The following have graduated in medicine as the result of the special examination for ex-Service students:—

C. A. Aymer, Isobel M. G. Bisset, William S. Cochar, Henry B. Cook, Alex J. Curr, Nellie S. Diack, Isabella R. Gordon, J. Grant, W. P. Jordaan, D. F. McGregor, N. M. Maclennan, R. Macleod, J. W. Macrae, D. Meldrum, W. J. Meldrum, J. I. Milne, Victor E. Milne, William G. Murray, J. D. Pole, J. Rannie, C. Reid, H. Ritchie, Charles Shapiro, J. C. Souter, Harriet J. S. Taylor, M. Taylor, V. M. M. Watson, Annie T. West. J. C. Souter graduated with second-class honours, while N. M. Maclennan, W. J. Meldrum, Victor E. Milne, and J. C. Souter passed their final professional with distinction.

UNIVERSITY OF MANCHESTER.—At examinations held recently the following candidates were successful in the subjects indicated:—

FINAL M.B. AND CH.B. EXAMINATION.

R. S. van Aalten, G. H. Buckley, Vincent Chadwick (second-class honours), N. S. Craig, O. M. Duthie, H. E. Emmett, Caroline M. Edwardes-Evans, William Geraghty, Marguerite F. Johnstone, Jessie Kilrow, W. L. Martland, Margaret Pownall, Harry Rosenthal, J. W. Smith, S. N. Taylor, Nora N. Walker, and James Worthington.

Forensic Medicine.—Reginald Anderton, H. P. Fay, F. W. W. Fox, C. B. Kirkbride, and A. A. Pomfret.

Medicine.—Samuel Adler and Dorothy M. L. Dyson.

Obstetrics.—R. J. Allison and Dorothy M. L. Dyson.

Surgery.—R. J. Allison.

THIRD M.B. AND CH.B. EXAMINATION.

Pathology.—K. V. Bailey, Gwendoline A. G. Edwardes-Evans, and G. B. Lord.

Pharmacology.—Hanna Aziz, Soloman Bernstein, Arnold Brown, Mary S. Davies, Charles Eccleston, Madge E. Edwards, R. A. Ferguson, R. W. Fairbrother, E. St.G. Gilmore, Anne H. Glancy, W. G. Howson, Alun M. Jones, A. C. Kelly, V. F. Lambert, G. F. S. Parker, Miles Parkes, Kate B. Scott, Dorothy Simmons, Marjorie Thompson, and E. J. Warburton.

DIPLOMA IN DENTISTRY.

Final Examination.—M. H. Duxbury, J. L. Halliwell, A. V. Littlewood, H. V. Longson, and G. H. Wood.

Systematic Surgery.—S. J. Gray.

Dental Surgery.—A. N. Place.

Dental Prosthetics.—S. J. Gray and A. N. Place.

UNIVERSITY OF LEEDS.—A congregation of the University was held at the Medical School on Dec. 22nd, presided over by Sir Michael Sadler, the Vice-Chancellor, when the following degrees were conferred:—

DOCTOR OF MEDICINE.

Louis Gordon.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY WITH HONOURS.

First Class: John T. Blackburn and Digby Chamberlain. *Second Class:* Donald I. Currie, Henry Duck, William H. Leake, Hilda Thistlethwaite, John L. Wesley-Smith, and Charles H. Wilson.

BACHELOR OF MEDICINE AND BACHELOR OF SURGERY.

Alfred L. C. Harrop, Ralph Hodgson, Eric E. Holdsworth, Marion Knowles, William A. D. Lawson, Elsie E. McNeice, Horace C. Petch, Osra Muriel Phillips, Phyllis M. Platt, Douglas Robertson, and Harriette A. Wilson.

In examinations held recently the following candidates have been successful:—

FINAL M.B., CH.B. EXAMINATION.

Part I.—J. Atkinson, Marjorie Baxter, W. H. Bean, Aileen M. Claye, F. Clegg, I. H. Cohen, L. Cohen, M. Cohen, R. E. Crockatt, Dorothy M. Edgcombe, H. Fallows, J. Freeman, H. A. Hellewell, S. Hyman, Marjorie M. Jackson, R. H. Lodge, A. A. Masser, P. Oberman, J. R. Oddie, J. E. Outhwaite, Gwendoline F. Prince, P. Rosenbloom, G. H. Sellers, H. Sheard, D. M. Sutherland, A. L. Taylor, G. M. Wadsworth, A. Walbank, G. F. Walker, J. S. Walker, Gretta M. Wardle, and R. Wood.

Part II.—Edith Ghosh, S. Levy, and Jessie Sheard.

FINAL L.D.S. EXAMINATION.

Part I.—G. C. Channon, A. D. Clubb, J. C. Crossley, A. D. Page, and G. B. Reid.

Part II.—N. L. King, L. Temple, and F. L. Tomlinson.

DIPLOMA IN PUBLIC HEALTH.

H. J. G. Wells.

This year the University has instituted a Diploma in Nursing, the first of its kind in the Empire. The regulations of the diploma have been founded on the curriculum of training in the Leeds General Infirmary. The promoters of this training school for nurses have been fortunate in the coöperation of the matron of the infirmary, Miss E. S. Innes, and have selected her as recipient of the first diploma conferred. Five other nursing diplomas were awarded.

ROYAL COLLEGE OF PHYSICIANS AND ROYAL COLLEGE OF SURGEONS IN IRELAND CONJOINT EXAMINATIONS.—At examinations held recently the following candidates were successful:—

FINAL PROFESSIONAL EXAMINATION.

Edward S. Becker, Eric J. Benson, William H. Browne, John F. J. Cleary, John J. Clune, Ambrose Doran, William C. Dwyer, Jeremiah F. Enright, Mea Williams Frazer, John J. Fitzsimons, John MacFarlane Gray, Michael P. P. Higgins, Charles S. Hills, James H. Lawlor, Matilda G. Neill, Richard H. Nightingale, John O'Leary, Gordon S. Rutherford, and Thomas G. Whitcroft.

DIPLOMA IN PUBLIC HEALTH.

Vincent J. Glover, Harold L. Mooney, and John A. Musgrave.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—At recent examinations the following candidates were successful:—

FINAL FELLOWSHIP EXAMINATION.

William J. Dunlop, Frederick Gill, Sylvester J. Healy, and William Napier.

ROYAL SANITARY INSTITUTE.—Maj.-Gen. J. E. B. Seely has consented to preside at the thirty-third congress of this Institute, to be held at Bournemouth from July 24th to 29th, 1922.

POST-GRADUATE COURSE ON ORTHOPÆDICS.—A course on Orthopædics will be held by Dr. F. Calot, chief surgeon to the Hôpital Rothschild, of the Institut Orthopédique de Berck, at his Paris clinic from Jan. 23rd to 29th, 1922, from 2 P.M. to 7 P.M. daily. The course is designed for medical men and students, native and foreign, and demonstrations in English and Spanish will be given. The fee is Fr.150. A detailed programme and any other information required can be obtained from Dr. Fouchet, Institut-Calot à Berck-Plage, or from Dr. Collew, Cliniquc-Calot, 69, Quai d'Orsay, Paris.

CHILD-STUDY SOCIETY.—A lecture entitled "The Supernormal Child" will be given in the botanical theatre of University College, London, on Wednesday, Jan. 4th, 1922, by Robert Rusk, M.A., Ph.D. Dr. C. W. Kimmins will be in the chair.

HARVEIAN SOCIETY.—The annual general meeting of this Society will be held at the Medical Society's Rooms, 11, Chandos-street, London, W., on Thursday, Jan. 12th, 1922, at 8.15 P.M., when the election of officers for 1922 will take place, and Dr. G. de Bec Turtle will deliver the presidential address on "Some Points on Spasm in the Alimentary Tract." A short musical programme has been arranged.

MEDICAL RECIPROCITY WITH BELGIUM.—The Belgian Academy of Medicine, which has been requested by the Minister of the Interior to give its opinion on a proposal by the British Government for an Anglo-Belgian agreement providing for the reciprocal exercise of medical practice, has appointed a special commission to report on the matter. The Academy itself is stated to be in favour of the scheme.

THIRD INTERNATIONAL CONGRESS OF THE HISTORY OF MEDICINE.—At a general meeting held at the Royal Society of Medicine on Dec. 21st the following were elected officers of the Congress:—President of Honour: Sir Norman Moore. President: Dr. Charles Singer. Treasurer: Mr. W. G. Spencer. General Secretary: Dr. J. D. Rolleston. Vice-Presidents: Sir D'Arcy Power, Dr. Tricot-Reyer, Dr. E. Jeanselme, Dr. E. Ménétrier.

Mr. Frederick Walter Way, M.R.C.S., L.S.A., who died at Portsmouth on Dec. 21st at the age of 87, had retired from practice for many years. He entered St. Thomas's Hospital in 1852, qualified in 1856, and held house appointments at the Northampton General Asylum and at the Stourbridge Dispensary, afterwards becoming surgeon to the Royal Portsmouth Hospital. He married a daughter of the Rev. J. W. Banks, and their son who, like his father, was a student at St. Thomas's Hospital, is in practice at Southsea.

NATIONAL ASSOCIATION FOR THE PREVENTION OF INFANT MORTALITY.—A course of advanced lectures on infant care, for infant welfare workers, teachers, and mothers, will be held at the Lecture Hall, Carnegie House, 117, Piccadilly, London, on Mondays, at 6 P.M. from Jan. 23rd to April 10th, 1922. The syllabus includes the following lectures: The Normal Development of the Fœtus, by Dr. T. W. Eden; Venereal Disease in relation to Motherhood and Infancy, by Mrs. Scharlieb; Physiology of Pregnancy and Labour, by Lady Barrett; The Scientific Principles underlying Artificial Feeding, by Dr. Eric Pritchard; The Nervous Child, by Dr. David Forsyth; Skin Diseases in Young Children, by Dr. Henry MacCormac; Tuberculosis in Infancy and Childhood; by Dr. T. N. Kelynack; The Prevention of Ear and Throat Troubles, by Mr. Philip Franklin; An Infant Welfare Programme, by Dr. Harold Scurfield; How to Conduct an Infant Consultation, by Dr. Harold Waller; Mental Deficiency in Children under School Age, by Dr. A. F. Tredgold; The Psychology of Early Childhood, by Dr. H. Crichton Miller. Tickets (for the whole course of 12 lectures, 8*s.* 6*d.*, for any one lecture, 1*s.* 3*d.*) may be obtained from Miss Halford, Hon. Secretary, National Association for the Prevention of Infant Mortality, 117, Piccadilly, London, W.1.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A special post-graduate course in general medicine will be held from Jan. 9th to Feb. 18th, 1922, at the following hospitals: Bethlem Royal Hospital, Cancer Hospital, Chelsea Hospital for Women, Hospital for Consumption and Diseases of the Chest, Hospital for Epilepsy and Paralysis, Middlesex Hospital, National Hospital for Diseases of the Heart, Paddington Green Children's Hospital, W., Royal Westminster Ophthalmic Hospital, St. George's Hospital, St. Mark's Hospital for Diseases of the Rectum, St. Marylebone General Dispensary, St. Peter's Hospital, and Western Hospital. The syllabus for the first week includes five lectures and demonstrations at the Brompton Hospital; a post-mortem demonstration by Dr. R. Donaldson at St. George's Hospital; operations at the Chelsea Hospital by Mr. Victor Bonney, who will also give a demonstration on the Treatment of Prolapse, and by Mr. F. L. Provis, who will also lecture on X Ray Therapy in Gynæcology, and demonstrations at the same hospital by Mr. Aubrey Goodwin and Mr. L. C. Rivett; a lecture by Mr. J. Swift Joly at St. Peter's Hospital on Calculous Disease of the Urinary Organs, and a demonstration of infectious cases under treatment at the Western Hospital by Dr. R. M. Bruce. Further particulars will be found in our Medical Diary. The fee for the course is 15 guineas, and the names of those wishing to attend should be sent as soon as possible to the Secretary at the Fellowship of Medicine, 1, Wimpole-street, London, W. 1, to whom all inquiries should be addressed.

MEMORIAL TO A MEDICAL MAN.—On Dec. 18th, in Bath Abbey, a tablet was unveiled and dedicated to the memory of Dr. George Hely-Hutchinson Almond, Temporary Captain, R.A.M.C., who was killed in action at Caix, France, on August 9th, 1918. The tablet was erected by members of the medical profession in the city of Bath and the surrounding district; Dr. A. E. Norburn performed the unveiling ceremony in the presence of many of the late Dr. Almond's former colleagues.

GENERAL HOSPITAL, BIRMINGHAM.—At a meeting of the governors, held on Dec. 23rd, it was decided that from Jan. 1st, 1922, all patients with three exceptions should be required to pay a maintenance charge at a rate not exceeding £2 2*s.* a week, according to their means. The exceptions are: (*a*) Such accident or urgent cases as are unable to pay; (*b*) other patients who provide an in-patient ticket and are unable to pay; and (*c*) employees and their dependents who provide a ticket through their employer or through a Works or Office Benevolent Fund subscribing directly to the hospital. It was further resolved that 1 per cent. of the amount received by the hospital owing to the adoption of the maintenance charge should be set aside to form a "Medical Staff's Equipment Fund," which should be placed at the disposal of the medical staff either for the purchase of special equipment or apparatus, or in any other way which, in the opinion of the staff, would be of benefit to the hospital. A year ago the board of management recommended a similar scheme to the governors which aroused considerable opposition on the part of working-class supporters, who offered, if the maintenance charge was dropped, to make good the sum required through a Hospital League which should collect money from the factories. The Hospital Saturday Fund felt that the League was trespassing on its ground and the other hospitals also opposed it. The League has now abandoned its collections in factories, but branches have been formed in various districts to make house-to-house collections. Already by the exertions of the Handsworth branch enough money has been collected to reopen 12 of the closed beds.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

Wednesday, Jan. 4th.

SURGERY: at 5.30 P.M.

Discussion: On "Post-operative Embolism and Infarction," to be opened by Mr. J. P. Lockhart-Mummery.

The following will contribute to the discussion:—Mr. Victor Bonney, Prof. Collingwood, Sir Charles Gordon-Watson, and Dr. Arthur Latham.

Members of other Sections are cordially invited to attend the above meeting.

Thursday, Jan. 5th.

OBSTETRICS AND GYNÆCOLOGY: at 8 P.M.

Specimen:

Mr. Beckwith Whitehouse: Tubal Lithopædion.

Short Communications:

Mr. Beckwith Whitehouse: Salpingotomy versus Salpingectomy in the Treatment of Tubal Gestation.

Mr. John B. Hunter (introduced by Dr. Blacker): Short History and Post-mortem Notes of an Interesting Case of Diffuse Carcinoma following Cancer of Cervix (illustrated).

Paper:

Mr. Aleck W. Bourne: Hyperthyroidism in Functional Menorrhagia.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.

MONDAY, Jan. 2nd.—2 P.M., Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Mr. Banks Davis: Diseases of the Throat, Nose, and Ear.

WEDNESDAY.—2 P.M., Mr. Tyrrell Gray: Operations.

THURSDAY.—2 P.M., Mr. Bishop Harman: Eye Department.

FRIDAY.—2.30 P.M., Dr. Pritchard: Visit to Medical Wards.

SATURDAY.—2 P.M., Dr. Owen: Medical Out-patients.

Daily:—10 A.M., Visit of Post-graduates to Wards. 2 P.M., In-patient, Out-patient Clinics and Operations.

IMPERIAL COLLEGE OF SCIENCE, South Kensington.

WEDNESDAY AND THURSDAY, Jan. 4th and 5th.—3 to 6 P.M. and 7 to 10 P.M., Physical Society and Optical Society's annual exhibition. Lectures illustrated by experiments will be given.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester Square, W.C.

THURSDAY, Jan. 5th.—6 P.M., Chesterfield Lecture. Dr. W. Griffith: Parasitic Diseases of the Skin.

THE WOOD-HILL FUND.

THE following subscriptions and promises have been received to the fund for reimbursing Dr. H. Wood-Hill in the very heavy expenses incurred by him in the case Clayden *v.* Wood-Hill, in addition to those recorded in the lists published in our issues of Dec. 3rd (p. 1187) and Dec. 17th (p. 1299). There is still ample need for further support.

	£	s.	d.
Amount previously acknowledged	471	7	6
Staff of the Radcliffe Infirmary, Oxford (per Dr. Ernest Mallam); Manchester Medical Committee (per Dr. John D'Ewart) .. .. .. each	21	0	0
Mr. A. E. Webb-Johnson, C.B.E., D.S.O., London; Sir Charles Ryall, C.B.E., London.. .. each	10	10	0
"A Friend"	10	0	0
Dr. Wilfred Attlee, Eton; Mr. Charles W. Biden, Laxfield; Mr. Douglas N. Seth-Smith, Bildeston; Medical Staff of the Macclesfield General Infirmary (per Dr. H. N. Rankin); Mr. C. H. Fagge, London each	5	5	0
"F," London; Dr. H. Russell Andrews, London; Drs. A. Ll. Vaughan and J. Cuthbert Pearce, Diss .. .. each	5	0	0
Mr. E. D. Telford, Manchester; Mr. C. F. Gray, Newmarket; Mr. Gordon H. Hackney, Edgbaston; Dr. O. R. M. Wood, Woolpit; Medical Staff of the Hospital of St. Cross, Rugby (per Dr. A. I. Simey) .. .. each	3	3	0
Mr. George Billing, Blackpool; Mr. A. Roalfe Cox, Mortimer; Mr. H. Barham Blackman, Norwich; Dr. F. R. Todd, Taunton; Dr. Gould May, London; Mr. H. V. Mitchell, Brockford; Mr. Alfred Linnell, Northampton; Mr. Henry G. Biddle, Stradbroke; Dr. Henry A. Ronn, M.C., Wymondham, Dr. Robert Grant, Cromer; Dr. Alfred E. Carsberg, Bournemouth; Dr. C. Gordon Roberts, Halstead; Mr. H. F. Stilwell, Hayes; Mr. John Fraser, M.C., Edinburgh; Mr. W. Theodore Hare, M.C., Earl Soham; Mr. Lionel Colledge, London; Mr. Charles W. M. Hope, O.B.E., London; Dr. G. Bertram Muriel, Whitehaven; Mr. A. Y. Pringle, O.B.E., Ipswich; Mr. Maurice Mottram, Sibford Ferris .. .. each	2	2	0
Mr. H. Barrett Pope, M.C., Leeds; Mr. James Taylor, Clifton; Dr. Thomas Laird, Heywood; Mr. G. H. Ransome, Walberswick; Drs. Jupp and Fawcus, Chard; Mr. W. K. Brewer, Hampstead; Dr. Helen I. Moss, Guildford; Dr. Frank Bryan, Ipswich; Dr. Alwyn H. Bradley, Leicester; Dr. Harold H. Stiff, Bury St. Edmunds; Dr. G. Secretan Haynes, Cambridge; Mr. E. V. Russell Woodford, Abingdon; Mr. George Morgan, Brighton; Dr. L. S. B. Tasker, M.C., Stockton Heath; Mr. C. B. Mooring Aldridge, Bournemouth; "W. H. H."; Mr. J. Kennish, Clapham Common; Dr. Alaric Ballance, Hatfield; Messrs. Husbands and Husbands, Taunton; Dr. Peter Macdonald, York; Dr. Thomas Milnes Bride, Manchester; Mr. G. Francis Smith, Watford; Mr. Montagu Cutcliffe, Dawlish; Dr. Bernard E. Potter, London; Dr. J. Barr Stevens, London; Dr. William H. Payne, Brockley; Mr. T. Herbert Goodman, Haverhill; Dr. F. N. H. Maidment, Harleston; Dr. E. A. C. Baylor, Ipswich; Dr. G. E. Haslip, London; Mr. Laurence C. Panting, Truro .. .. each	1	1	0
Mr. C. Leonard Traylen, Willesden Green; Dr. W. H. Maidloe, Ilminster; Mr. F. Marmaduke Sealy, Paddock Wood; Mr. T. W. Robbins, Ipswich; Mr. Martin O. Raven, Broadstairs each	0	10	6
Dr. R. J. Collyus, Dulverton; M.D.(ret.), Southbourne .. .. each	0	5	0

THE LANCET: SUBSCRIPTION RATES.

INLAND	One Year	£2 2 0
	Six Months	1 1 0
	Three Months	0 10 6
ABROAD	One Year	£2 10 0
	Six Months	1 5 0
	Three Months	0 12 6

Subscriptions may commence at any time and are payable in advance. Cheques and P.O.'s (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to THE MANAGER, THE LANCET Offices, 423, Strand, London, W.C. 2.

ADVERTISEMENT RATES.

Books and Publications .. .. } Four Lines
Official and General Announcements } and under 6s. 0d.
Trade and Miscellaneous Advertisements .. .. }

Every additional line, 1s. 6d.

Quarter Page, £3. Half a Page, £6. Entire Page, £12.
Special Terms for Position Pages.

Appointments.

FURNISS, A., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg. L.M.S.S.A., Lond., L.D.S. Vict., D.P.H. Manch., has been appointed House Physician, Royal United Hospital, Bath.

HIGGINS, J. B., M.B., Ch.B. Vict., Honorary Assistant Radiologist to the Salford Royal Hospital.

KING, W. S., M.B., Ch.B. St.And., D.P.H., Medical Officer of Health for Stirling.

MITCHINER, P. H., M.S.Lond., F.R.C.S.Eng., Surgeon with charge of Out-patients, Great Northern Central Hospital.

Certifying Surgeons under the Factory and Workshop Acts: DAVIDSON, N., M.B., Ch.B. Aberd. (Peterhead); WICKHAM, H. B., M.R.C.S., L.R.C.P.Lond. (Rufford).

Vacancies.

For further information refer to the advertisement columns.

Beckenham Education Committee.—Ophth. S. 3 guineas per session.

Birmingham General Hospital.—Res. M.O. £155. H.P. and H.S.

Birmingham, Rubery Hill and Hollymoor Mental Hospital.—Jun. Asst. M.O. £400.

Birmingham University.—Prof. of Anatomy. £1000.

Bolton County Borough.—Asst. M.O.H. and School M.O. £400.

Bury Infirmary.—Jun. H.S. £150.

Chartham Mental Hospital, near Canterbury.—Second Asst. M.O. £350.

City of London Hospital for Diseases of the Chest, Victoria Park, E.—Res. M.O. £250.

Derby, Derbyshire Royal Infirmary.—H.S. and Asst. H.S. and Cas. O. Each £200.

Dudley, Guest Hospital.—Res. M.O. and Asst. Res. M.O. £270 and £150 respectively.

Fulham, Metropolitan Borough.—M.O.H. £900.

Gloucester County Mental Hospital.—Jun. A.M.O. £350.

Hertford County Hospital.—H.S. £200.

Hospital for Sick Children, Great Ormond-street.—Cas. O. £400.

Leeds Public Dispensary.—Sen. Res. M.O. £250. Hon. Surg.

Lincoln, Bracebridge Mental Hospital.—Med. Supt. £750.

Lincoln County Hospital.—Jun. H.S. £150.

Lincoln, Lindsey County Council.—Female Asst. M.O. £550.

Liverpool, Royal Children's Hospital.—Hon. Asst. S.

London Temperance Hospital.—Res. Cas. O. £150.

Manchester, Ancoats Hospital.—Res. Surg. O. £250.

Metropolitan Asylums Board.—Dentist. £499 17s. 6d.

Miller General Hospital for South East London, Greenwich-road.—H.P. £150.

Putney Hospital.—Hon. Surg.

Royal Naval Medical Service.—Surg. Lieuts.

St. Mark's Hospital for Cancer &c., City-road, E.C.—Part-time Pathologist. X Ray M.O.

St. Marylebone Hospital, Ladbroke-grove.—Third Asst. M.O. £300.

St. Thomas's Hospital Medical School.—Dem. of Anatomy. £400.

Sheffield Royal Infirmary.—Cas. O. and H.S. £150.

Southampton Free Eye Hospital.—H.S. £150.

Springfield Mental Hospital, Wandsworth Common.—Asst. M.O. £625.

Sutton, Surrey, Downs Sanatorium.—Jun. Asst. M.O. £515 6s.

Walsall General Hospital.—Female Jun. H.S. and Anæsth. £175.

Births, Marriages, and Deaths.

BIRTHS.

FOLEY.—On Dec. 17th, at Ebury-street, the wife of Walter B. Foley, M.B., of a daughter.

LOVEDAY.—On Dec. 18th, at Spring Lodge, Fallowfield, Manchester, the wife of Dr. G. E. Loveday, of a son.

MARRIAGES.

WARDROP—SUTTON.—On Dec. 17th, at St. Anne's Church, Highgate, J. G. Wardrop, M.D., Leamington, eldest son of John G. Wardrop, Lynthorpe, Montpelier-road, Ealing, to Muriel, daughter of A. Sutton, 9, Brookfield Park, N.W.

DEATHS.

DOBRASHIAN.—On Dec. 21st, at 32, Greenhill-road, Harlesden, N.W., Gabriel S. Dobrashian, M.R.C.S. Eng., L.S.A., aged 67 years.

LITTLEWOOD.—On Dec. 18th, suddenly, at Erpingham Lodge, Norfolk, Harry Littlewood, C.M.G., F.R.C.S.Eng., in his 61st year.

OATES.—On Dec. 21st, at Langside-avenue, Putney, S.W., Robert Oates, M.B., L.R.C.S., in his 95th year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

A NUMBER of provincial schools are reported to have been in the midst of an epidemic of influenza when they broke up for the Christmas holidays.

Notes, Short Comments, and Answers to Correspondents.

THE PERILS OF THE WEEK-END—AND AFTER.

IN the normal healthy organism, apart from mere greediness, appetite is determined by the speed of basal metabolism, and, whatever physiological text-books say to the contrary, it is a matter of ordinary human experience that this metabolism can be greatly speeded up. The wider freedom of the leisure hours of the week-end produces in the case of many ordinarily sedentary people a condition of well-being and increased appetite which is apt to last on into the beginning of the working week with disastrous consequences; for, with the return to the warmth, shelter, and restricted elbow-room of the office, the means for getting rid of waste products of metabolism are at once reduced and a heavy price is paid for dietary indiscretion which would have been tolerated with impunity on the preceding days. Many people found the uncongenial restrictions associated with food rationing resulted in a diminution of digestive disturbances to which they had accustomed themselves as part of the inevitable routine of city life. It is easier to bear good-humouredly a compulsory rationing in which one's friends and neighbours share than personally to initiate voluntary restriction in the presence of plenty. But there is little doubt that it would greatly add to the amenities of office life and to the digestive comfort and mental efficiency of its denizens, should it become the usual practice of returned week-enders to drop their midday meal on Monday. Should this prove too high a task, other means might be taken to get rid of incomplete products of combustion arising from the excessive use of fuel in an engine which has slowed down. But restricted intake would be better.

HEALTH IN A FEW WORDS.

Sir Robert H. Firth, author of well-known text-books on hygiene and joint author with Colonel J. Lane Notter of Practical Domestic Hygiene, has compiled a useful 14-page folder which does not belie its title, Health in a Few Words. Intended for the use of anyone interested in domestic hygiene—and everyone should be—it is especially suitable for distribution by medical officers of health among their health officials, the published price, 2*d.*, bringing it within the reach of all. The folder contains notes on the dwelling and its proper sanitary care, the physics of air and its effects upon health, water in the economy of the body, food, personal hygiene, the care of the child, and such matters as require to be known with regard to infection and disinfection, salient facts being printed in red. A table is given showing the value in calories per ounce of the more common articles of diet, and under the heading of infection are conveniently set out in tabular form the periods of incubation, onset, and disappearance of eruption, period of quarantine, and cessation of the contagious period of infectious diseases. If every man and woman in the community could be induced to digest and apply the information contained in this folder it would conduce to a healthier and more efficient population. Messrs. John Bale, Sons and Danielsson, Ltd., of 83–91, Great Titchfield-street, London, W., are the publishers.

SWIMMING-BATH SANITATION.

A COMPREHENSIVE article by Mr. G. M. Fair in the current number of the *International Journal of Public Health* recalls the hygienic importance of aiming at a high standard of cleanliness for bathers themselves and the water in which they bathe. Among diseases which may be transmitted by bathing in public baths, he places infections of the intestinal tract, respiratory system, skin, eye and ear, and venereal disease. To the frequency of middle-ear affections recent correspondence in our columns has borne witness. As regards the mode of spread of disease, various possibilities are considered by Mr. Fair, including water-supply from an impure source and contamination by bathers, and the common use of infected towels and bathing suits which have been imperfectly sterilised. The lack of proper adjustment of the temperature of the water and room air and inadequate ventilation are also recognised as likely to lead to harmful results. The regulations in force in parts of U.S.A. to ensure the purity of the swimming bath are quoted by him as examples of sanitary administration which might well be universally adopted in the interests of the public. They concern the design and maintenance of the bath, the dressing-rooms, shower-baths, galleries, and enclosing structure, as well as the supervision of the bathers, their costumes, and towels. The requisite degree of purity of the water can be secured either by the periodic change or by the continuous flow system, or the re-purification process of circulation by pumping the used water through filters and returning it to the bath. As an alternative, disinfection of the water is advocated either by chlorination or by copper sulphate, or by exposure of the re-circulated supply to the action of ultra-violet light, chlorine, or ozone. It is clear that the hygienic condition of the bath will also depend on its size, the number of bathers, their state of cleanliness, as well as the amount of fresh or disinfected water added.

For the bath supply water bacteriological standards of purity, as proposed by the public health authorities, have been decreed in certain of the American States, varying between the total bacterial counts per c.cm. of 500 to 1000 organisms developing on agar incubated at 37° C. for 48 hours. For *B. coli* there should be a proportion not higher than 25 per cent. of this total. Other authorities aim at only one to 10 of *B. coli* per c.cm. and some even at an ideal standard conforming with drinking water, which permits a total count of 100 colonies and a *B. coli* content of one in 50 c.cm. The difficulties of formulating and adhering to such standards are recognised, but it is maintained that they can be met by properly organised control and supervision. In addition to governing the construction, equipment, and operation of the baths, the regulations conforming with the desired standards ensure sanitary control of the premises, the cleansing and emptying of the baths, and the correct disposal of the water on discharge. They further provide for the supply of sterilised towels and bathing suits and instruct bathers to cleanse themselves thoroughly with soap and water douche before entering the bath. Other important details, such as the supply of spittoons, the inspection of disease suspects, and the prohibition of smoking, are included in a code which, if carried out, should attain a standard of swimming-bath hygiene and sanitation approaching perfection. The only reservation in our mind is whether, in view of the formidable regulations, a prospective bather may not consider a fresh-water bath in an enclosure—never so enjoyable as a dip in the open sea—to be hardly worth the bother or the risk where the necessary precautions are not in force.

SAFEGUARDING OF INDUSTRIES ACT: EXCLUSION OF SANTONIN.

THE Board of Trade announced on Dec. 21st that the referee, after hearing a complaint under Section 1 (5) that santonin had been improperly included in the lists of articles chargeable with duty under Part I. of the Act, had given a judgment upholding the complaint. Accordingly santonin is withdrawn from the lists as from Dec. 20th.

FLOWER HOUSE, CATFORD.

THIS well-known house of retreat for the reception of male patients suffering from mental and nervous disorders was visited recently by a representative of THE LANCET in view of developments which are projected by the management of the institution. The house, which is just within the boundaries of the County of London, is an old family mansion standing in grounds of 22 acres comprising a large playing field, the cricket field being "as large as Lord's," tennis courts, football grounds, ornamental and vegetable gardens. The whole estate is well timbered, while the neighbouring park lands are exceptionally fine, making the environment beautiful. The house itself is well appointed and furnished, is licensed for 32 patients, and the voluntary boarder is especially catered for, all possibilities of freedom being accorded. A scheme is in progress for the reception of female patients. This will entail a good deal of outlay for extension, but there is no doubt that well found and managed retreats for female patients of this sort are required.

TAXATION FOR HOSPITAL UPKEEP.

THE city of Whittier, California, established as a Quaker settlement 35 years ago, and now a flourishing community of 10,000 inhabitants, was in April, 1921, presented with a hospital, the gift of a neighbouring landowner. The latter philanthropist was prepared also to equip the hospital, but the municipal authorities decided to give the city the opportunity of sharing the task of this provision, and by invitation of the chamber of commerce the various churches, lodges, and clubs joined energetically in the work. The Woman's City Club of Whittier, for instance, became responsible for the maternity department, whilst the members of the medical profession equipped an operating room with the most modern apparatus. A fund of $25,000 was raised among the citizens for purposes of maintenance. Finally, in September, the California Legislature enacted a law authorising cities of the fourth and fifth classes to accept gifts from individuals for the establishment of hospitals, and empowering them to levy any necessary taxation for maintenance, upkeep, and extension of such hospitals.

The above information is derived from the *Bulletin* of the Chicago School of Sanitary Instruction, which makes the editorial comment that the action of the Whittier municipal authorities should be of value to smaller towns and cities throughout the U.S.A. in suggesting to them the way by which adequate hospital facilities may be obtained.

A CASE OF PERSISTENT DIARRHŒA.

To the Editor of THE LANCET.

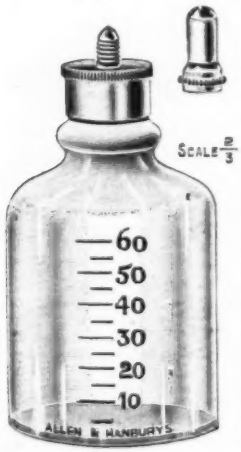
SIR,—Will any professional brother give me a help if he can? I am 75 and have travelled a good deal in the tropics, &c., but have had no disease from that. Now for a few years I have had persistent diarrhœa; no hæmorrhage, mucus, or pain; no albumin or sugar. I have seen specialists and been under treatment for three years. I have in all lost 4 st., and to-day I still have this persistent diarrhœa, which is weakening me, and nothing I can find to arrest. Will someone advise and give a prescription?

I am, Sir, yours faithfully,

Dec. 23rd, 1921. SURGEON.

A VALUABLE MEDICAL LIBRARY.

SEVENTY-SEVEN years have elapsed since the foundation of the firm now known as H. K. Lewis and Co., Ltd., of 136, Gower-street. The directors of the business have issued an illustrated brochure containing a brief account of its history and development from 1844 till the present day. The exact year when the well-known circulating library was opened is not certain, but must have been 1846, 1847, or 1848; it was established to meet the needs of professional men with regard to current medical literature, and enables subscribers to keep abreast of recent work of all kinds. A library reading and writing room is provided for the use of subscribers, and all books are arranged so that they may be freely inspected and exchanged. The catalogue, revised to December, 1917, with a supplement for 1918–1920, contains upwards of 13,000 titles, with a classified index of authors and subjects.



AN IMPROVED CHLOROFORM BOTTLE.

Mr. E. S. Ellis, M.R.C.S., honorary anæsthetist to the Hospital for Sick Children, Gloucester, calls our attention to an improvement which he has made in Mills's chloroform bottle. To prevent the falling out of the leaden stopper, an accident which may happen with disastrous result, he has had made by Messrs. Allen and Hanburys a bottle in which the stopper screws, not to a collar, which is also liable to come off, but to a thread cast in the glass itself. A second feature of the bottle is that its squat shape makes it more stable, while the graduation in cubic centimetres or ounces, reading from below upwards, simplifies the administration of mixtures.

RELATIVE VALUE OF INSULATING SUBSTANCES.

THE recently issued special report[1] on Heat Insulators by the Engineering Committee of the Food Investigation Board deals with the thermal conductivity of material usually employed in cold storage work. The experiments carried out in order to determine relative values in this respect were directed by Mr. Ezer Griffiths, D.Sc., a member of the committee. In the course of the work it was established that for most substances, in order to maintain a vertical wall lagged with a substance at a uniform temperature from top to bottom, it is necessary to supply more heat per unit area to the bottom than to the top of the wall. This necessity was traced to loss of heat due to convection currents set up in the air circulating through the pores of the insulating material, and much of the apparent change of conductivity with temperature was traced to these currents.

Cork, slagwood, charcoal, and wood fibres, when of good quality and dry, were found to have practically the same thermal conductivity—viz., 0·00011 g. cal. per sec. per cm. per 1° C. [= 0·32 British thermal units per sq. ft. per hour for 1″ and for 1° F. diff.]; from the fact that entirely different materials were found about equally good as insulators it appeared that their resistance to conduction is not far from the limiting value that is practically obtainable by dividing the air space. Still air has a thermal conductivity of only 0·00005 C.G.S. units [= 14 B.T.U.'s per sq. ft. per hour for 1″ and for 1° F. diff.] or barely half that of the best of these materials, so that there is still a margin for improvement by finding a more suitable material in cellular form.

It is definitely stated in the report that although different brands of cork vary slightly in their efficiency as insulators, with good brands such differences are not very considerable, and that the extravagant claims made for certain insulating materials are devoid of foundation.

[1] Department of Scientific and Industrial Research: Food Investigation Board Special Report No. 5. Copies obtainable at H.M. Stationery Office, Imperial House, Kingsway, W.C. 2.

A WARNING.

WE are informed that a man, posing as a naval officer and a nephew of Prof. Thelwall Thomas, of Liverpool, is calling on doctors in the London area who have been either students or house surgeons in Liverpool. He endeavours to obtain hospitality and money. Prof. Thelwall Thomas informs us that he is an impostor.

THE THERAPEUTIC VALUE OF ALCOHOL.

IN the *Journal* of the American Medical Association of Dec. 3rd, 1921, an attempt is made to secure the views of a representative number of the medical profession in America upon the use of alcohol as a therapeutic agent. The profession is quoted on both sides in the controversy upon this subject, and in order to obtain an accurate division of opinion with regard to the latter a questionnaire has been carefully prepared and sent to 40,000 physicians—every other name on the mailing list of the *Journal*—and to 10,000 physicians who are neither members of the Association nor subscribers to the *Journal*. The terms of the questions asked are briefly as follows:—

Questionnaire on Alcohol as a Therapeutic Agent.

In what line of practice are you engaged? General practice? Specialty?

Do you regard whisky, beer, or wine, as necessary therapeutic agents in the practice of medicine?

[By "whisky" is meant distilled liquors, whether whisky, brandy, gin, or rum. By "beer" is meant beer with the same alcoholic content as prevailed before prohibition went into effect, also ale, stout, porter, &c.]

Have instances occurred in your own practice in which unnecessary suffering or death has resulted from the enforcement of prohibition laws?

How many times have you found it advisable to prescribe these liquors in a month?

Is the prescribing of alcoholic liquors forbidden by your State law?

The present regulations limit the number of prescriptions to 100 in three months. In your opinion, should there be any limit to the number of prescriptions for alcoholic liquors a physician may write?

In your opinion, should physicians be restricted in prescribing whisky, beer, and wine?

The list of names covers the whole country, and much interest will attach to the replies given in answer to this referendum.

INCREASE OF PENSIONS SINCE 1914.

THE following interesting table appears as an appendix to Mr. Wilkinson Sherren's exhaustive "Rights of the Ex-Service Man and Woman," a complete guide to war disablement pensions, allowances, grants, gratuities, rights of appeal, provisions for treatment and training, land settlement and overseas settlement, &c., to which the Right Hon. C. A. McCurdy, M.P., contributes a preface. The book is published by L. J. Gooding, 25, Old Queen-street, Westminster, at the price of 6*d*.

CLASS.	AMOUNT PAYABLE.		
	In 1914.	In September, 1918.	Present day.
Privates — Total disablement.	10/6 to 17/6	27/6 with children's allowances.	40/– with children's allowances.
Wife of totally disabled man.	Nothing	Nothing.	10/– a week.
Childless widow.	5/–	13/9 rising to 15/– at 45.	Under 40, 20/– Over 40, 26/8.
Widow with one child.	6/6	20/5 with 1/3 extra at 45.	36/8
Widow with three children.	9/6	29/7 with 1/3 extra at 45.	50/2
Motherless children.	3/– each	10/– for first, 9/2 for each other child.	12/– for first and 11/– for each other child.
Pending settlement of pension claim.	Nothing	27/6 with allowances for wife and children.	*40/– with allowances for wife and children.

* In the case of men discharged before Oct. 1st, 1921, or in the case of men who were in hospital on Sept. 30th, 1921, and were invalided without returning to duty.

SOLUBLE ASPIRIN

KNOWN AS

Litmopyrine (BISHOP) Lithium Acetyl-salicylate

DOES NOT UPSET THE STOMACH

Prompt and Definite in Action.

Antipyretic.—Litmopyrine effects most rapid temperature reductions. The fall begins about fifteen minutes after administration, reaches the minimum within the first hour and lasts for three to four hours, at expiration of which period the dose may be repeated if necessary.

No Harmful By-effects—Litmopyrine being freely soluble, passes at once through the stomach unchanged, and therefore unlike the insoluble Acetyl-salicylic acid, which splits off its salicylic acid in the stomach. Litmopyrine never causes gastric irritation, nausea or loss of appetite. Litmopyrine has no harmful effect on the heart or kidneys, and does not cause ringing in the ears.

BISHOP'S LITMOPYRINE is free from all the faults and defects of Acetyl-salicylic acid, and is a much more efficient, reliable and successful antipyretic, analgesic and anti-rheumatic. Its introduction has overcome the last obstacles to the satisfactory administration of the salicylates, and the salt is now widely prescribed for **Muscular** and **Articular Rheumatism, Polyarthritis, Neuritis, Sciatica, Gout, Lumbago, Influenza,** and **all Feverish Conditions, Colds, Catarrhs, Bronchitis, Headaches,** and **Neuralgia.**

Analgesic.—Litmopyrine speedily allays the muscular and joint pains of influenza, as well as of Rheumatic and Gouty Disorders, and promptly relieves Headaches.

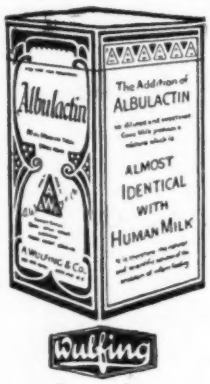
Diaphoretic.—Litmopyrine causes gentle, but not profuse perspiration.

Complete Solubility of Litmopyrine in water and alcohol permits of its administration in syrups, infusions, tinctures and all other alcoholic or aqueous solutions, wherein Litmopyrine is exhibited in a form to ensure its immediate absorption and full activity.

Samples and Descriptive Literature sent Post Free to Medical Men by the Sole Manufacturers of Litmopyrine.

ALFRED BISHOP, LTD., Manufacturing Chemists,
48, SPELMAN STREET, LONDON, E.1.

In bottles at 3/6 and 7/-



Infantile digestive troubles

such as those due to heavy curd formed by ordinary diluted cow's milk are most amenable to the action of

Albulactin

By its addition to the feeding bottle the percentages of casein and lactalbumin are correctly adjusted — just as they are in normal breast milk—and the fine flaky curd formed upon ingestion is most easily digested. Properly modified cow's milk, with the correct proportion of Albulactin gives an infant food which conforms as readily to the digestive capacity of the premature weakling as to that of the normal infant.

All enquiries regarding Albulactin should be sent to
J. G. CLARK, 71, HIGH HOLBORN, W.C. 1.

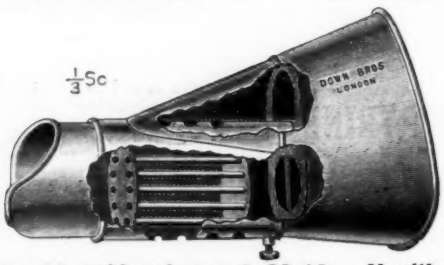
The Lancet says :
"The most striking results are those in which diluted cow's milk failed by itself, but succeeded when a proportion of Albulactin was added to it."

DOWN BROS.' SPECIALITIES

A NEW WARM ETHER INHALER

Suggested by
Dr. G. A. TICEHURST,
Assistant Physician, East Sussex Hospital.
(*Vide* LANCET, July 9th, 1921.)

STERILIZABLE—SIMPLE—STRONG—COMPACT. NO PARTS TO BREAK IN USE.



Price complete with inflatable rubber face-pad, £2 10s. If without face-pad, £2 3s. 3d.
FULL DESCRIPTIVE CIRCULAR ON APPLICATION.

GRANDS PRIX.
Paris, 1900. Brussels, 1910. Buenos Ayres, 1910.

And GOLD MEDAL, Allahabad, 1910.

MANUFACTURED BY
DOWN BROS., Ltd., SURGICAL INSTRUMENT MANUFACTURERS : :
21 & 23, St. Thomas's St., London, S.E. 1.
(Opposite GUY'S HOSPITAL.)
Factories: KING'S HEAD YARD & TABARD STREET, LONDON, S.E. 1.
Telegraphic Address: "DOWN, LONDON." *(Regd. throughout the World.)* **Telephone: HOP 4400 (4 lines).**

PIONEERS AND EMPIRE BUILDERS: No. 129
FIFTH PERIOD, circa 6000 to 2000 B.C.

TRADE MARK 'TABLOID' BRAND Hypodermic Products

A comprehensive series is issued amongst which are the following:

TRADE MARK 'TABLOID' BRAND Hypodermic
Atropine Sulphate
" Cocaine Hydrochloride
" Digitalin
" Emetine Hydrochloride
" Hyoscine Hydrobromide
" Morphine Hydrochloride
" Quinine Bisulphate
" Strychnine Hydrochloride

Always write
'Tabloid'
in full

Combine convenience with extreme accuracy of dosage.

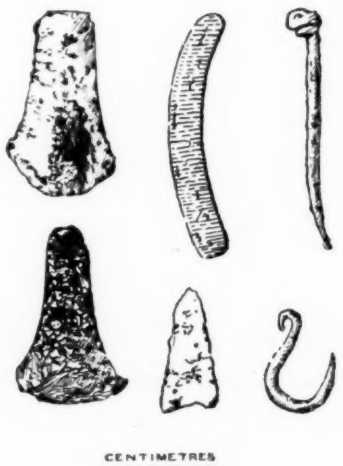
'Tabloid' Products ensure the full therapeutic effect of exceptionally pure medicaments.

Enable solutions to be made in the syringe if desired; are rapidly and completely soluble.

Remain unaltered for many years in any climate.

For full list, etc., see Wellcome's Medical Diary

BURROUGHS WELLCOME & CO., LONDON
NEW YORK MONTREAL SYDNEY CAPE TOWN MILAN
SHANGHAI BUENOS AIRES BOMBAY
All communications intended for the Head Office should be addressed to SNOW HILL BUILDINGS, LONDON, E.C. 1
London Exhibition Room: 54, Wigmore Street, W.



COPPER IMPLEMENTS ILLUSTRATING THE FIRST EFFORTS MADE BY MAN TO WORK IN METAL.—Neolithic man brought the art of making implements and weapons in stone to the highest degree of perfection possible; if further advance was to be made it was necessary to find a new material. In an uncertain locality and at an uncertain time he discovered, and learned how to use, copper, and it is of this material that he made his first metal implements. Although easier to work, copper is far inferior to stone for weapons and tools, and did not replace it; stone continued to be used for the more important purposes, while minor accessories, such as those employed in the skinning of animals, for instance, were made of copper. The discovery of copper working and smelting was, nevertheless, an immense stride, for it was the pioneer step which led to the invention of bronze out of which most efficient tools and weapons came to be made, and which gave rise to many civilising arts, crafts and industries. The magnificent development of civilisation in the Ægean, for example, was the outcome of the introduction of bronze into that region. Copper has been found in the oldest cemeteries known in Mesopotamia and Egypt, where it seems to have been used earlier than in the West; but much remains to be discovered as to place and date of origin. Many objects which have long been described as being of bronze have recently been proved, upon analysis, to be of copper and this line of investigation has disturbed earlier beliefs as to the dates of development of the various phases of metal-working. **DATE: EARLIEST AGE OF METAL BEGAN c. 6000 or 5000 B.C.**

COPYRIGHT

NON-ANTITOXIC SERUM TREATMENT

THE HÆMOSTATIC PROPERTIES OF ORGANIC SERUM.

IN the two previous articles (*vide* THE LANCET, April 2nd and June 25th, 1921) we discussed the mechanism of the *HÆMOPOIETIC* action of serum obtained from animals at the height of the blood regeneration phase, and the practical application of the three Hémostyl preparations, viz. :—

Ampoules ..... fresh liquid serum.
Syrup ..... total hæmopoietic blood.
Tablets ..... total hæmopoietic blood desiccated.

In the present article we will deal with the HÆMOSTATIC PROPERTIES of organic serum.

"The most ancient pharmacopœias by a simple "process of logic recommended the blood of various "animals, applied locally or by ingestion, for the "arrest of hæmorrhage." (P. Carnot.)

At the present day, especially since the investigations of P. E. Weill, HORSE SERUM, preferably in the form of a total blood preparation, is widely employed in the treatment of hæmorrhage.

"The mechanism of its action depends essentially "on the presence in the serum of a small quantity "of fibrin-ferment (of leucocyte origin)—the ferment "determining coagulation; in case of hæmorrhage "rapid coagulation hastens wound closure.

"Serum-Opotherapy acts in two directions: either "by supplying the principles of blood-coagulation in "which the organism is deficient (hæmorrhage in "general), or by furnishing the organism with anti-"bodies capable of saturating the anti-coagulation "substances which it contains. (Hæmophilia)."

Good results have already been obtained with normal serum; but one may go further and endeavour methodically to reinforce these normal physiological properties, so as to endow the serum with a much more energetic hæmostatic effect.

"With this end in view we have studied the "hæmostatic effect of the serum of animals sub-"jected to a series of artificial bleedings. It has "been observed that such animals regenerate their "blood extremely rapidly. Further, *in consequence* "*probably of these successive bleedings, the coagulation* "*time, and therefore the duration of hæmorrhage, are* "*progressively shortened.*

"The clot in such cases is extraordinarily firm, "uniform, adherent to the vessel-wall, and retrac-"tile; and this in direct ratio to the number of "bleedings. Of course the bleedings must not be "too copious nor too frequently practised.

"It is definitely established that THE SERUM "OF ANIMALS SUBJECTED TO A SERIES "OF BLEEDINGS IS ABNORMALLY HÆMO-"STATIC and hæmopoietic.

"Such serum has therefore the great advantage "of being activated in these two directions com-"plementary to each other, and hence doubly useful "in the treatment of the Hæmorrhagic Syndrome."

PRACTICAL INDICATIONS FOR THE TREATMENT OF HÆMORRHAGE.

Hémostyl is employed locally, by mouth or rectum, or by subcutaneous injection.

LOCAL USE.—Apply on gauze or other dressing directly to the bleeding surface.

EXAMPLES: Recent wound of finger in a hæmophiliac (Weill), hæmorrhage from the gums (Broca), arrest by pad of wool soaked in serum.

After Tonsillectomy (Wirth), by swabbing the raw surface with serum.

After Prostatectomy, by injection of serum into the prostatic cavity through supra-pubic drains.

Gynæcology, plugging the uterus and vagina with ribbon gauze soaked with serum. (Dalché.)

MOUTH AND RECTAL ADMINISTRATION.—Hæmoptysis (E. C. Hort, of Turquay): arrest of hæmorrhage by repeated administration by the mouth of 10 c.c.

Gastric Ulcer, with hæmatemesis and melæna (Hort). This case, rebellious to the ordinary treatment, yielded progressively to the administration by the mouth of 11 doses of 10 c.c. each; stomach pain was relieved, the general resistance was increased, together with a rise in the blood-count and hæmoglobin index.

Intestinal hæmorrhage, arising from Typhoid or Tuberculous ulceration; 20 to 30 c.c. liquid serum administered as a high enema through a rubber catheter. A case of severe enteric fever, complicated by grave hæmorrhage from the gums, is reported by Prof. CRUCHET: "Copious hæmorrhage from the "gums complicating a case of severe enteric fever "with phlebitis; disappeared after the administra-"tion by enema of liquid serum on alternate days; "in all six enemata were given; after the second "the mouth hæmorrhage was entirely arrested; "after the fifth, and especially after the sixth enema, "the toxic phenomena were notably diminished, the "rise of temperature due to the phlebitis had then "completely vanished."

Rectal administration should always be employed in all cases of hæmorrhage from the *Abdominal* or *Pelvic* Organs.

SUBCUTANEOUS INJECTION.—This method is reserved for cases of *ACUTE HÆMORRHAGE*. 30 c.c. are injected into the cellular tissue of the flank. When possible, subcutaneous injection should be combined with the local application of serum, or mouth or rectal administration—whichever route is the most likely *to bring the serum nearest to the site of hæmorrhage.*

STATUS HÆMORRHAGICUS.

According to WEILL, these conditions depend upon the insufficiency in the blood of Fibrin-ferment; in consequence he recommends the use of serum with the view of supplying the deficit.

HÆMOPHILIA.—(*a*) As a prophylactic measure: the rectal administration of liquid serum for a week in each month, during four or five months at a time. (*b*) In case of accidental Acute Hæmorrhage: immediate subcutaneous injection of 30 c.c.

PURPURA.—Good results are reported by LAUNOY and MORESTIN: "A veritable resurrection" is the term they employ in describing some of their results.

PRE-OPERATION PROPHYLAXIS.

Before operation, in cases where free bleeding is to be apprehended, a prophylactic enema of serum gives definite and more satisfactory results than the usual Calcium Chloride—e.g., diseases of the biliary passages, chronic jaundice, the calculous diathesis in general, accouchements, dental operations, tonsillectomy, &c.

———, **M.B., B.S. Lond., writes**:—

"I have used Hémostyl in numerous cases, especially in cases of anæmia and asthenia of convalescence.

"I have also used it with much success in old persons.

"One of the great advantages of Hémostyl is that it can be given by the mouth.

"It is tasteless, and is assimilated by even the most delicate stomach."

Apply for Literature and Samples to WILCOX, JOZEAU & CO., 49, Haymarket, London, S.W. 1.
26

PIONEERS AND EMPIRE BUILDERS: No. 130
FIFTH PERIOD, circa 6000 to 2000 B.C.

TRADE MARK 'TABLOID' BRAND

Cascara Sagrada, gr. 2

Reduced facsimile

TRADE MARK 'TABLOID' BRAND
Cascara Sagrada
gr. 2

Supplied to the Medical Profession in bottles of 25 and 100, at 7d. and 1/6 per bottle.

Also supplied in the following strengths:
Gr. 1, gr. 3, gr. 4, gr. 5, 0·15 gm. and 0·25 gm.

Made from genuine, fully matured bark.

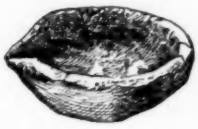
Produces the full physiological effect of the true drug.

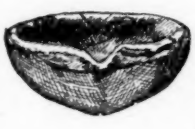
Is preferred on account of its unvarying reliability.

For full particulars, see Wellcome's Medical Diary

BURROUGHS WELLCOME & CO., LONDON
NEW YORK MONTREAL SYDNEY CAPE TOWN MILAN
SHANGHAI BUENOS AIRES BOMBAY
All communications intended for the Head Office should be addressed to SNOW HILL BUILDINGS, LONDON, E.C. 1
London Exhibition Room: 54, Wigmore Street, W.

APPARATUS FROM THE STOCK-IN-TRADE OF THE EARLY PIONEER METALLURGISTS.—Copper is found in the native metallic state in very few localities, the principle being Lake Superior, Chile, Yunnan in China, Bolivia, Burra Burra in Australia, and Cornwall. In most regions man had to discover, or learn from others, the art of extracting it from its ores (which occur throughout Europe and are widespread in Asia) before he could even begin to emerge from the pure Stone Age. The oxidised copper ores were sometimes associated with ores of arsenic, antimony, silver, or tin, and these would affect the purity of the copper according to their proportion; where tin was associated in large quantities, as in Cornwall, the earliest implements would be of bronze, but only accidentally produced. The art of alloying copper with tin to form the harder metal was a much later discovery. It is believed that a knowledge of smelting came to man accidentally from the melting of a lump of ore in the camp fire. His attention would be attracted by the resulting cake of metal and he probably tried to fashion it into a tool or weapon in his usual Stone Age way, and thus became aware of its malleability and other properties. He then probably made a cavity in the hearth into which the melting metal would run, and this would be the earliest metallurgical furnace. Before casting his implements he would re-melt the metal in crucibles of clay, strengthened with quartz, such as those here reproduced, and then pour it into moulds of clay or stone—the one on the right here figured is of stone. Thus, as we may gather from the relics of his industry, did the first metallurgist become the originator of the great blast furnaces of the present day with all their related industries. The step to the knowledge of use of metal was one of the greatest developments in the evolution of civilisation—some say the very greatest.





DATE: EARLIEST AGE OF METAL BEGAN c. 5000 B.C. or 5000 B.C.

COPYRIGHT

HOEFFTCKE'S EXTENSION APPLIANCES.

Ambulatory Treatment of Fracture of the Limbs; Tuberculous and Arthritic Disease of Joints.

By C. A. HOEFFTCKE,
7, Harley Street, W. 1.

(Continued from June 11th.)

THE case below shows clearly the success which can be obtained with Hoefftcke's Extension appliance in a diseased joint, which seemed almost hopeless from a surgeon's point of view.

The same principle is applied in the treatment of Arthritic Joints and Fractures. See also

Proceedings of the Royal Society of Medicine, vol. ii., No. 8, June, 1909.

PATHOLOGICAL DISLOCATION OF KNEE CORRECTED BY MEANS OF APPARATUS.

By W. H. Battle, F.R.C.S., Surgeon, St. Thomas's Hospital.

Proceedings of the Royal Society of Medicine, vol. vi., No. 2, 1912.

A CASE OF RHEUMATOID ARTHRITIS.

By ————, F.R.C.P., Physician, St. Thomas's Hospital.

Extract (see THE LANCET, May 29th, 1920) :—

THE ADVANTAGES AFFORDED BY EXTENSION IN THE TREATMENT OF DISEASED JOINTS.

By Sir W. Arbuthnot Lane, Bart., M.S., F.R.C.S.,
Consulting Surgeon, Guy's Hospital, &c.

"Quite a number of years have elapsed since my views on the treatment of tuberculous, rheumatoidal, and other conditions of joints by means of rest were first shaken and then altered by the observation of the results of the combination of movements and extension afforded by Mr. Hoefftcke's appliances. Up to that time I was imbued with the view, then accepted, that rest was a factor of vital importance in the treatment of diseased joints. I then learnt that if sufficient extension could be exerted to take pressure off the opposing articular surfaces of the affected joint movement was often most beneficial and often accompanied with little or no pain. This is an illustration of the law to which I have frequently called attention—namely, that everything that is universally accepted as true in surgery is invariably false. It is not possible to exert upon all diseased joints, such as those of the spine, enough strain to enable the application of this principle. Yet even in these joints it points the direction in which we should work."

Effect of the Apparatus on the Diseased Joint. .....

Miss I. G., 4 years of age, February, 1906, fell off chair, taken to Dr. H., who diagnosed fluid on knee-cap. 14 days at home. Sent to Guy's Hospital and was put under Sir A. F., who diagnosed tubercular knee. Father had T.B. in throat and chest, two brothers died of the same complaint at the age of 25 years.

The limb was put in plaster. When plaster removed at the end of eight months limb was atrophied. Plaster continued for two years, after which time it was put on a wooden back splint and bandaged. It then commenced to contract to an angle of 20 degrees.

The patient was put under another surgeon, who told the mother the only cure would be to take the leg off. The mother did not consent; took the child out of hospital and went to St. Bartholomew's Hospital, where the same advice was given as in Guy's—to have the leg taken off.

Patient then contracted diphtheria and was sent to Fever Hospital, Hither Green. After return from hospital was better in health and sent to school, but leg gradually contracted more and more. Then went to St. Thomas's Hospital under Mr. N., who applied a gutter splint put on in contracted position, and ordered vaccine for about 12 consecutive weeks. In November leg still contracted nearly to right angle. Joint was then straightened to 45 degrees by Mr. N. under an anæsthetic without extension; put in plaster for about six weeks. Iron hoop fastened on knee with prolonged bar attached, by which means surgeon tried to straighten joint further by means of strap below the calf; great pain on top of knee. Upon plaster being cut off, Dec. 23rd, it was found that skin was broken just above patella; knee-joint still contracted to an angle of 40 degrees. Weight extension was applied until the end of January. Patient was then discharged, with knee at angle of 40 degrees, on crutches, with patten on healthy foot. Barely a week at home when abscess broke out on lateral exterior margin of knee on the inside of the burse just below fibular condyle.

Taken back to St. Thomas's Hospital Feb. 27th, Mr. N. opened and drained abscess. Five weeks in hospital; sent to convalescent home on crutches for three weeks; abscess still suppurating.

Hoefftcke's Extension splint ordered and applied February, 1913. The patient walked well within a week's time. Abscess still discharging; knee-joint nearly at right angle. Joint was gradually straightened with steel bar traction, discharge of abscess diminished, and within three months from the time extension was applied by means of Hoefftcke's Extension splint the sinus was closed up and the joint was straight.

Steel bar traction was replaced by elastic traction and movement encouraged while walking. From that time on recovery was uninterrupted. Splint was taken off two and a half years from the time it was first applied, the limb was then fully developed and movement perfect.

The last nine months while she was walking with the splint she was employed in a hat shop and sent out on occasional errands.

The patient, who is now a robust girl of 17, came to see me about three months ago, and told me that she was doing well in her employment, and has had no further trouble since splint was taken off four years ago, and uses limb the same way as any other healthy limb.

(To be continued August 20th).

J. & A. CHURCHILL

NOW READY. **36s.** net; postage 1s. 3d.

THE MEDICAL DIRECTORY, 1922

BUY NOW AND SECURE A WHOLE YEAR'S USE.

"Not only accurate, but arranged with taste and a sense of proportion."—THE LANCET, 3rd Dec., 1921.
"Too well known to make it necessary to say anything in its praise."—BRITISH MEDICAL JOURNAL, 3rd Dec., 1921.

NEARLY READY. Price **6s.** net; postage 4d.

NERVE EXHAUSTION

By **Sir MAURICE CRAIG,** C.B.E., M.D., F.R.C.P., Physician for and Lecturer in Psychological Medicine, Guy's Hosp.

Nerve exhaustion is so common a disorder and is of such importance to the individual and to men in general that nothing should be left undone to lessen its incidence. In the past attention has been more largely directed to the treatment of the condition than to its prevention. In writing this book the author wishes to emphasize the importance of the latter. A healthy nervous system is of vital concern to both mind and body. Its work and how it becomes fatigued are entitled to the most careful study.

THIRD EDITION. 27 Plates. **18s.** net, postage, 9d.

CRAIG'S PSYCHOLOGICAL MEDICINE

NOW READY. 31 Illustrations. **7s. 6d.** net, postage 4d.

STUDIES IN INFLUENZA AND ITS PULMONARY COMPLICATIONS

By **D. BARTY KING,** O.B.E., M.D., Physician to the Royal Chest Hospital, London.

SEVENTH EDITION. With 71 Illustrations. **24s.** net, postage 1s.

CUSHNY'S PHARMACOLOGY AND THERAPEUTICS.

By **ARTHUR R. CUSHNY,** M.D., F.R.S., Professor of Pharmacology, University of Edinburgh.

By **HENRY JELLETT,** M.D., F.R.C.P.I.

4TH EDITION. 374 Illus. 11 Col. Plates. **21s.** net, postage 1s.

A PRACTICE OF GYNÆCOLOGY

With New Chapters on Radiotherapy and Vaccine Treatment.

4TH ED. 316 Illustrations. 10 Col. Plates. **15s.** net, postage 1s.

A SHORT PRACTICE OF GYNÆCOLOGY

8TH ED. 207 Text-figures. 4 Col. Plates. **18s.** net, postage 8d.

A SHORT PRACTICE OF MIDWIFERY

5TH ED. 6 Plates, 169 Text-figures. 8s. 6d. net, postage 6d.

A SHORT PRACTICE OF MIDWIFERY FOR NURSES

Translated and Edited by **MINA L. DOBBIE,** M.D., B.Ch. **8s. 6d.** net, postage 4d.

NOTES ON DISEASES TREATED BY MEDICAL GYMNASTICS & MASSAGE

By **Dr. J. ARVEDSON,** Gymnastic Institute, Stockholm.

SECOND EDITION. With 182 Illustrations. **32s.** net, postage 1s.

KLEEN'S MASSAGE & MED. GYMNASTICS

BOOKS ON DENTISTRY

HANDBOOK OF MECHANICAL DENTISTRY

By J. L. DUDLEY BUXTON, L.D.S.
With 168 Illustrations. 16s. net, postage 5d.

UNDERWOOD'S SYNOPSIS OF DENTISTRY

With 10 Illustrations. 9s. 6d. net, postage 3d.

WALLIS'S ATLAS OF DENTAL EXTRACTIONS

Shows how to Extract Teeth with a minimum number of Appliances and without a Dental Chair.
SECOND EDITION. With 11 Plates. 6s. net, postage 4d.

TOMES' DENTAL ANATOMY

Edited by MARETT-TIMS and HOPEWELL-SMITH.
SEVENTH EDITION. 229 Illustrations. 18s. net, postage 1s.

TOMES' DENTAL SURGERY

FIFTH EDITION. 318 Illustrations. 15s. net, postage 1s.

HOPEWELL-SMITH'S DENTAL ANATOMY

With 6 Plates and 340 Text-figures. 21s. net, postage 1s.

HOPEWELL-SMITH'S HISTOLOGY OF THE MOUTH

Vol. I.—Normal Histology. With 2 Coloured Plates and 262 Text-figures, including 149 Original Photomicrographs.
Vol. II.—Pathological Histology. 394 Illustrations, including 343 Original Photographs. £2 2s. per set, postage 1s. 3d.

THIRD EDITION. With 64 Illustrations. **21s.** net, postage 1s.

FLEMING'S SHORT PRACTICE OF MEDICINE

With 300 Original Illustrations, many in Colour. **32s.** net, postage 1s. 3d.

TAYLOR'S OPERATIVE SURGERY

"Eminently practical.....confidently recommended.....a credit to the surgery of the kingdom.....printing excellent."—THE LANCET.

"The very best book of its kind in the British language."—THE PRACTITIONER.

ROWLANDS & TURNER'S OPERATIONS OF SURGERY

SIXTH EDITION. With 797 Illustrations, 40 in Colour. Two Volumes. **50s.** net, postage 1s. 6d.

"The new 'Jacobson' ranks **easily first as the finest work** *in its subject in our own and probably in any other tongue."*
—BRIT. MED. JOUR.

THIRD EDITION. With 52 Plates in Colour, and 257 Figures in the Text. **38s.** net, postage 1s.

SEQUEIRA'S DISEASES OF THE SKIN

"By the inclusion of all the important advances made in dermatology during the war, the book has been brought entirely up to date. The illustrations are numerous and good and the text not too complicated. ..... It is concise, and each disease is dealt with methodically. This new edition deserves even greater success than the previous one."—EDINBURGH MEDICAL JOURNAL.

London: J. & A. CHURCHILL, 7, Great Marlborough Street, W. 1.

IN THE PRESS

A TEXT-BOOK OF THE PRACTICE OF MEDICINE

Including Sections on DISEASES OF THE SKIN and PSYCHOLOGICAL MEDICINE. Tropical Diseases are also included.

In one Volume. By various Authors who have made a special study of the different branches of Medicine.

Edited by FREDERICK W. PRICE, M.D., F.R.S. (Edin.),

Senior Physician to the Great Northern Hospital; Physician to the National Hospital for Diseases of the Heart, London.

LIST OF CONTRIBUTORS.

ADIE, W. J., M.B., M.R.C.P., Assistant Physician to Charing Cross Hospital; Physician to the Great Northern Hospital.

BARWELL, Harold S., M.B., F.R.C.S., Senior Surgeon for Diseases of the Throat and Ear, St. George's Hospital.

BEAUMONT, G. E., M.A., M.D., F.R.C.P., Assistant Physician to the Middlesex Hospital; Assistant Physician to the Brompton Hospital for Consumption and Diseases of the Chest.

BOX, Charles R., M.D., B.Sc., F.R.C.P., F.R.C.S., Senior Physician to St. Thomas's Hospital; Physician to the London Fever Hospital.

BROWN, W. Langdon, M.A., M.D., F.R.C.P., Physician with Charge of Out-patients, St. Bartholomew's Hospital; Physician to the Metropolitan Hospital.

BYAM, W., O.B.E., Lieut.-Colonel, R.A.M.C. (retired), Lecturer on Tropical Medicine, St. George's Hospital Medical School.

COLLIER, James, M.D., B.Sc., F.R.C.P., Physician to St. George's Hospital; Physician to the National Hospital for Nervous Diseases, Queen Square.

CRAIG, Sir Maurice, C.B.E., M.D., F.R.C.P., Physician for "Psychological Medicine," Guy's Hospital.

EVANS, Geoffrey, M.D., M.R.C.P., Assistant Director of the Medical Professorial Unit and Assistant Physician, St. Bartholomew's Hospital.

GRAHAM, George, M.D., F.R.C.P., First Assistant in the Medical Professorial Unit, St. Bartholomew's Hospital; Physician to the Great Northern Hospital.

GRAY, A. M. H., C.B.E., M.D., F.R.C.P., F.R.C.S., Physician in Charge of the Skin Department, University College Hospital; Physician for Skin Diseases, Hospital for Sick Children, Great Ormond-street.

HARRISON, L. W., D.S.O., M.B., Ch.B., M.R.C.P., Brevet-Colonel, R.A.M.C. (retired); Director of Venereal Department, St. Thomas's Hospital.

HORDER, Sir Thomas, M.D., B.Sc., F.R.C.P., Physician to St. Bartholomew's Hospital.

HURST, Arthur F., M.A., M.D., F.R.C.P., Physician and Director of Advanced Studies, Guy's Hospital.

HUTCHISON, Robert, M.D., F.R.C.P., Physician to the London Hospital; Physician to the Hospital for Sick Children, Great Ormond-street.

LEYTON, O., M.D., D.Sc., F.R.C.P., Physician to the London Hospital.

LOW, George C., M.A., M.D., Senior Physician to the Hospital for Tropical Diseases, Endsleigh Gardens, and Seamen's Hospital, Royal Albert Docks.

MACNAMARA, Eric Danvers, M.A., M.D., F.R.C.P., Physician for Mental Disorders to Charing Cross Hospital; Physician to the West End Hospital for Nervous Diseases.

MATTHEWS, John, M.B., Assistant in the Inoculation Department, St. Mary's Hospital.

PEMBREY, M. S., M.A., M.D., Lecturer in Physiology, Guy's Hospital; Professor of Physiology, University of London.

PRICE, Frederick W., M.D., F.R.S. (Edin.), Physician to the National Hospital for Diseases of the Heart; Senior Physician to the Great Northern Hospital.

SLESINGER, E. G., O.B.E., M.S., F.R.C.S., Assistant Surgeon to Guy's Hospital.

THOMPSON, Theodore, M.A., M.D., F.R.C.S., F.R.C.P., Physician to the London Hospital; Physician to the Hospital for Sick Children, Great Ormond-street.

THURSFIELD, Hugh, M.D., F.R.C.P., Physician to Out-patients, St. Bartholomew's Hospital; Physician to Hospital for Sick Children, Great Ormond-street.

WILLCOX, Sir W. H., K.C.I.E., C.B., C.M.G., M.D., B.Sc., F.R.C.P., Physician to St. Mary's Hospital.

YOUNG, R. A., C.B.E., M.D., B.Sc., F.R.C.P., Physician to the Middlesex Hospital; Physician to the Brompton Hospital for Consumption and Diseases of the Chest.

OXFORD MEDICAL PUBLICATIONS

THE *LANCET* BUILDING

1 & 2, BEDFORD STREET, LONDON, W.C. 2.

EASY control, ample room and full protection from weather, together with plenty of power, are all provided in the "Standard" Light Car, and the running expenses are remarkably low. The

Registered Trade Mark.

The All British

Standard

11 h.p. models for 1922 show steady development in the form of larger engine, four speeds, longer wheelbase, wider track, and larger wheels.

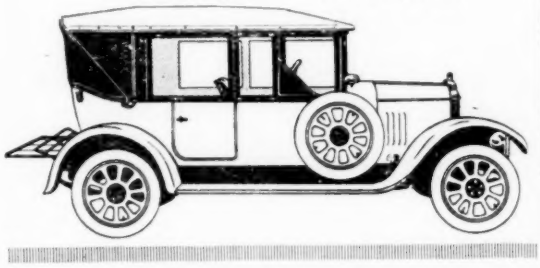
Count them on the Road.

Prices (with the "Standard" patent All-weather Hood and Side Curtains): 2-Seater, £515; 4-Seater, £525.

In addition, we are making a smaller model, the 8-h.p. "Standard" Light Car, with 4-cylinder (62×90 mm.) water-cooled engine. Price complete, 2 or 4-Seater, £325.

Full particulars on request.

The Standard Motor Co., Ltd., Coventry
London Showrooms - - 49, Pall Mall, S.W.1.



THE DOCTORS' FRIEND

The

ROVER

CAR

RELIABLE AND ECONOMICAL.

1922 Models:—

8 H.P.	TWO-SEATER	£220
13·9 H.P.	TWO-SEATER	£625
,, ,,	FOUR-SEATER	£650
,, ,,	COUPE (Fixed Top) ...	£750
,, ,,	COUPE (Drop Head) ...	£800
,, ,,	ALL-WEATHER (4-5 Seats)	£845
,, ,,	SALOON	£900

Write for full illustrated catalogues.

EARLY DELIVERIES. EXPERT ADVICE.
DEFERRED PAYMENTS 4% EXTRA.

Offord & Sons, Ltd.

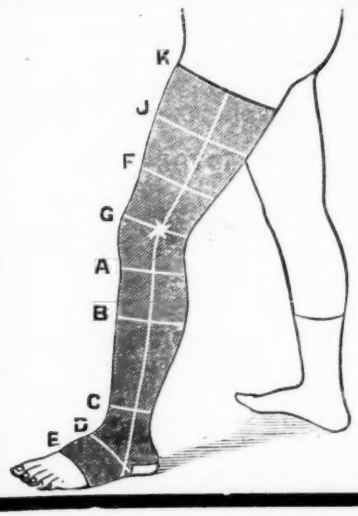
Established over a century.
67, George Street, Portman Square, W. 1.
Telephone: 99 Paddington. *Telegrams:* "Droffo, London."
AND AT SOUTH KENSINGTON

An Offer to Medical Men desiring New Cars

£100 down ensures immediate delivery of any leading make of car not exceeding £1,000 in value—the balance to be paid by agreed instalments.

Send full particulars, make and type of car required.

Mr. J. C. NEEDES (*Medical Partnership and Conveyancing Agency*)
8, DUKE STREET, ADELPHI, LONDON, W.C. 2
Tel.: "Acquirement, Westrand, London." Tel.: Gerrard 3543.



W. H. BAILEY & SON'S ELASTIC STOCKINGS

Write for Catalogue.

IMPORTANT NOTICE.

Messrs. W. H. BAILEY & SON are prepared to send (immediately on receipt of letter or telegram) thoroughly competent Assistants, Male or Female, to attend patients at their homes and to take Doctor's instructions. They personally superintend the making and fitting of the Appliance throughout, thus ensuring the best possible results.

PRIVATE FITTING ROOMS ON THE PREMISES.

Price Lists and Forms for Measurement Free.

38, Oxford Street, W. 1, and 2, Rathbone Place, W. 1.
Telegrams: "BAYLEAF LONDON." Telephone: Museum 1484.

The Radiologist who has worked for years with glass plates doesn't make a radical change and take up Eastman Dupli-Tized Film without a clearly defined reason. The great number of men who have taken up Dupli-Tized Film—and the list includes the leading Radiologists—realize that Film has set a new standard in negative quality. These men knew that they could do better work on Dupli-Tized Film than they could on glass plates—and that is why they made the radical change.

When you have failed with glass plates, you can suceed with Eastman Dupli-Tized X-Ray Film.

Kodak Ltd., (X-Rays Dept.), Kingsway, London, W.C. 2.

FREE!

AN ENTIRELY NEW CATALOGUE OF MODERN

X-RAY APPLIANCES

DESIGNED IN OUR OWN RESEARCH LABORATORIES, AND NEVER BEFORE MANUFACTURED IN THIS COUNTRY. . . . PROFUSELY ILLUSTRATED AND FULLY DESCRIPTIVE.

HAVE YOU HAD YOUR COPY? IF NOT WE WILL GLADLY SEND YOU ONE.

WE REPAIR X-RAY TUBES QUICKLY.

LET US QUOTE YOU FOR: Philips' Tubes, Coolidge Tubes, Plates, Chemicals, Photographic Accessories, Tube Stands, Screening Stands, Couches, Diathermy, Electro-Medical Appliances, X-Ograph Dental Films, &c., &c.

HUGE STOCKS—IMMEDIATE DELIVERY BY OUR OWN MOTOR VANS.

ACTUAL DESIGNERS AND MAKERS

X-Rays Limited

Managing Director: J. W. MASON

(CAPITAL £50,000.)

HEAD OFFICE AND SHOWROOMS—

11, TORRINGTON PLACE, GOWER STREET, LONDON, W.C. 1.

Close to University College Hospital, also Euston-square and Warren-street (Underground), and Euston (L. & N.W.), St. Pancras (Midland), and King's Cross (G.N.) Stations.

Workshops and Laboratories: MALET STREET, W.C.1. **Factory: QUEEN'S PARK, W.10.**

Telephones—MUSEUM 5073 and 3306. **Telegrams—EXRAYLIM, WESTCENT, LONDON.**

BRANCH: QUEEN'S ROAD, BRISTOL. **Telephone: Bristol 5251.**

Resident Representatives at Liverpool, Manchester, Birmingham, and Edinburgh.

SURPLUS
X-Ray & Electro-Medical Stores

The MEDICAL SUPPLY ASSOCIATION, Ltd.
167-185, GRAY'S INN ROAD, LONDON, W.C. 1

have acquired the surplus X-Ray and Electro-Medical Stores of the

WAR OFFICE

of an estimated value of **£100,000**

We are therefore able to offer apparatus by the best makers at a fraction of current prices. The Apparatus has been re-conditioned, and is therefore guaranteed to be in

PERFECT WORKING ORDER

THE STOCKS COMPRISE:—

COMPLETE X RAY INSTALLATIONS WITH ACCESSORIES, FROM	£115 0 0
DIATHERMY APPARATUS, FROM	£35 0 0
GALVANIC & FARADIC SWITCHBOARDS ON MARBLE PANEL, FROM	£16 10 0
WHEATSTONE ILLUMINATED STEREOSCOPES	£7 10 0
INDUCTION COILS FOR X RAYS, ETC.	£28 0 0
NEGATIVE VIEWING BOXES	£1 5 0
RADIOGRAPHIC COUCHES	£38 0 0
AMPEREMETERS, MILLIAMPEREMETERS, & VOLTMETERS, FROM	£2 5 0
WHOLE BODY LIGHT BATH CABINETS, FROM	£40 0 0
ELECTRO MAGNETS FOR SURGICAL PURPOSES, FROM	£8 0 0
INTENSIFYING SCREENS FOR RADIOGRAPHY, FROM	£1 0 0
„ SCREEN CASSETTES, FROM	£1 0 0
MERCURY INTERRUPTERS	£5 0 0

ETC., ETC.

NOTE—RE-CONDITIONED AND IN PERFECT WORKING ORDER.

SEND FOR SURPLUS CATALOGUE NO. 1, NOW READY.

EXPORT ORDERS WILL RECEIVE IMMEDIATE ATTENTION AND DESPATCH.

In those Countries where this class of goods is subject to Importation Tax a very considerable saving can be effected by ordering these stores.

An UNPRECEDENTED OPPORTUNITY for Hospitals, Doctors, Nursing Institutes, Sanatoria, Technical Colleges, Industrial Laboratories, &c., &c.

Applications for apparatus should be marked "SURPLUS," and addressed to—

MEDICAL SUPPLY ASSOCIATION, Ltd.
Electrical Department,
167-185, Gray's Inn Road,
London, W.C. 1,

stating apparatus required, voltage of your electrical supply, and whether constant or alternating current is available.

A detailed specification and estimate will be sent you by return.

HEARTBURN IN PREGNANCY

Savory & Moore desire to bring to the notice of the medical profession the remarkable efficacy of DR. JENNER'S ABSORBENT LOZENGES in relieving this common and distressing complaint. To their knowledge they have proved entirely efficacious in many obstinate cases when other methods of treatment have failed.

These lozenges were originally prescribed by Dr. Jenner for Heartburn and Acidity, and have ever since been prepared by Savory & Moore in their original form. They are perfectly harmless and, whilst neutralizing any free acidity, have no deleterious effect on the digestive organs.

SAMPLES of DR. JENNER'S ABSORBENT LOZENGES will be supplied to the Medical Profession on application.

SAVORY & MOORE LTD.
Chemists to the King,
143, New Bond Street, London.

GOLD MEDAL, International Congress of Medicine, 1913.

NOVOCAIN

The Original Cocaine-free Local Anæsthetic.

MINOR SURGICAL OPERATIONS IN GENERAL PRACTICE.

Small operations which the General Practitioner is daily called upon to perform, including **suture, incision, excision, painful manipulation** of wounds and fractures, **amputations,** &c., can be harmlessly and painlessly accomplished in the Surgery or Consulting-room by the injection of ¼ to ½ per cent. Novocain Solution, made by dissolving one "A" tablet in Physiological Saline Solution. **Six to seven times less toxic than Cocaine.**

PRICE PER TUBE OF 10 TABLETS, 1/6, per Post 1/8. *LITERATURE AND FULL TECHNIQUE ON REQUEST.*

THE SACCHARIN CORPORATION, Limited
(Pharmaceutical Dept.),
72, Oxford Street, London, W.1.
Indian Agents: Messrs. F. RUTTONSHAW & CO., Oak Lane, Esplanade Road, Fort, Bombay, INDIA.

The Tonic Food richest in VITAMINS, and therefore of great value in all wasting diseases. Delicate children thrive on it. The "A.B.C." of Diet.

'ROBOLEINE'

Samples and Literature on application to
OPPENHEIMER SON & CO., LTD.,
179, Queen Victoria Street, London, E.C.4.

STOVAINE

THE LEAST TOXIC OF LOCAL ANÆSTHETICS

USED IN THE SAME WAY AND AS EFFICACIOUS AS COCAINE

Does not create a habit and does not give rise to headaches, nausea, vertigo or syncope. :: :: *Literature on demand.*

NO HOME OFFICE LICENSE REQUIRED

Cheaper than Novocain and Benzocain and obtainable promptly in practically unlimited quantities from the manufacturers :

LES ETABLISSEMENTS POULENC FRERES

92, RUE VIEILLE DU TEMPLE, PARIS.

MAGISAL

Crush a MAGISAL TABLET (Martindale's Magical Aspirin) and stir it in a teaspoonful or two of water. It dissolves completely.

Do the same with an Aspirin Tablet (anybody's make) and note that it does not dissolve, or to be precise, a minute proportion of it only dissolves.

The solubility of MAGISAL is 1 in 12; that of Aspirin 1 in 500.

For prompt effect as an anti-rheumatic, anti-neuralgic, and influenza remedy, please prescribe MAGISAL.

Bottles of 50 Tablets - - 2/6.

W. MARTINDALE, 10, New Cavendish St., W.1.

Telephone: LANGHAM 2440 & 2441

The STANDARD HÆMATINIC

"The employment of Bi-Palatinoids places the administration of exceedingly unstable compounds like ferrous carbonate, phosphate and arsenate, upon a sounder and more scientific basis."—THE LANCET.

"BI-PALATINOIDS"

(No. 500)

OF NASCENT FERROUS CARBONATE.

Samples and Literature on application.

OPPENHEIMER, SON & CO., LTD.,
179, Queen Victoria Street, London, E.C. 4.
Entirely British House since Foundation in 1891.

In the treatment of Tuberculosis, it is indispensable to increase the tone of the system, and the functioning ability of the organs of circulation, assimilation, and elimination

FELLOWS' SYRUP of the HYPOPHOSPHITES,

"The Standard Tonic for over fifty years,"

contains mineral foods and stimulating agents which make it an ideal preparation for the dietetic and constitutional therapy of Tuberculosis.

Samples and Literature sent upon request.

FELLOWS MEDICAL MANUFACTURING CO., Inc.

26 Christopher Street, New York, N. Y., U.S.A.

Doctors! Don't trust imitations or substitutes

Specify MARSHALL'S

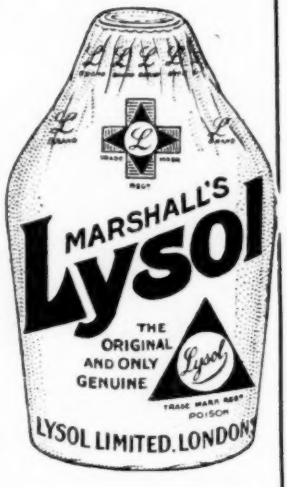
The ONLY GENUINE ORIGINAL LYSOL

REG. TRADE MARK.

Most Medical Men insist on Marshall's Lysol because it is superior to any other antiseptic or to any imitation or substitute. It is a standardised product and its efficiency is guaranteed

MARSHALL'S LYSOL

Contains the full percentage of free cresols to ensure thorough disinfection.
It makes a clear solution.
It is soapy to the touch.
It is NON-caustic. NON-irritant. NON-corrosive.



It is obtainable at all good-class Chemists and all branches of Boots Cash Chemists.
1/-, 1/9, 3/-, and 5/- per bottle.

FREE SAMPLES to Hospitals, Doctors, and Nurses on application.

SPECIAL QUOTATIONS FOR HOSPITALS

LYSOL LTD., Raynes Park, LONDON, S.W. 20.

Makers of LYSOL—ŌSYL—LYSOL SOAP.

SQUIRE'S ORGANO-THERAPEUTIC PREPS.

ELIX. HYPOPHYSIS CEREB.

(SQUIRE).

DOSE—20 to 60 minims = 1·2 to 3·6 c.c.

ELIXIR HYPOPHYSIS CEREB. (SQUIRE) is a powerful cardio-vascular tonic. It produces a marked and rapid increase in physical energy.

It is indicated in various cardiopathies, arterio-sclerosis, and in the cardiac debility of acute disease.

It is particularly useful in the rapid heart of influenza.

ELIXIR HYPOPHYSIS CEREB. (SQUIRE) is prescribed with marked success, in conjunction with **ELIXIR COLLOID** (SQUIRE), in certain forms of obesity.

ELIXIR COLLOID

(SQUIRE).

DOSE—20 to 60 minims = 1·2 to 3·6 c.c.

ELIXIR COLLOID (SQUIRE) is invaluable in Myxœdema, Cretinism, and **THYROID** inadequacy. It is prescribed with marked success, in conjunction with **ELIXIR HYPOPHYSIS CEREB.** (SQUIRE), in certain forms of obesity.

Telephones: Mayfair 2307 (2 lines). **Telegrams:** "Squire, Wesdo, London."

SQUIRE & SONS LTD. Chemists on the Establishment of the King, 413, OXFORD STREET, W.1.

ORGANOTHERAPY.

The ideal form for the administration of all Animal Extracts is the

'PALATINOID'

Hermetically sealed. Contents uncompressed. Perfect sterility. Certainty of assimilation.

SAMPLES & LITERATURE:—

OPPENHEIMER, SON & CO., Ltd., 179, Queen Victoria St., E.C. 4.

Cerebrinin
Fel Bovinum
Fel Porci
Gangloid Comp.
Mammary
Marrow, Red Bone
Nuco-gangloid
Nucloid
Orchitin
Ovarian
Pancreas
Pancreatin
Pepsin
Pituitary
Suprarenal
Tetraglandin
Thymus
Thyro-gangloid
Thyro-nucloid
Thyrocol
Thyroid

'INCITAMIN'

of PROFR. J. J. FISCHER of COPENHAGEN

(See LANCET, Oct. 29th, 1921, p. 933)

STIMULATING — SOOTHING — HEALING

INDICATED IN THE CASE OF RODENT ULCERS. Per 4 oz. Bottle **7 6.**

OPPENHEIMER, SON & CO., Ltd., 179, Queen Victoria Street, E.C. 4.

THE EMULSION FOR CHILDREN

In many of the wasting diseases of childhood, a sensitive, irritable stomach and intestines preclude proper nourishment. Under the administration of Angier's Emulsion these organs become pacified and retentive, digestion is strengthened and the assimilation of food is normal and complete. It is oftentimes surprising how quickly pale, flabby, weakly infants and children gain flesh, strength and vitality when they are given the Emulsion systematically.

ANGIER'S EMULSION

PETROLEUM WITH HYPOPHOSPHITES

The Original & Standard Emulsion of Petroleum.

We confidently urge its trial in marasmus, scrofulosis, inherited tuberculosis, anæmia, and in the malnutrition associated with acute infectious disease. It is likewise one of the most useful and dependable remedies for the treatment of bronchitis, whooping-cough, and the respiratory affections associated with measles and scarlet-fever. The pleasant, cream-like flavour of Angier's Emulsion and its ready miscibility with milk or water, make it eminently suitable for administration to children. They almost invariably like it.

FREE SAMPLES TO THE MEDICAL PROFESSION.

The ANGIER CHEMICAL CO., Ltd.
86, CLERKENWELL ROAD, LONDON, E.C.

A WORTHY ASSISTANT!

In those cases where the Medical profession considers it beneficial to recommend a perfectly genuine Port Wine—

GILBEY'S
INVALID PORT

can be prescribed with the utmost confidence, as the wine is the produce of choice grapes *ONLY*. We do not handle "mixtures," contending that medicines should be chosen by Doctors.

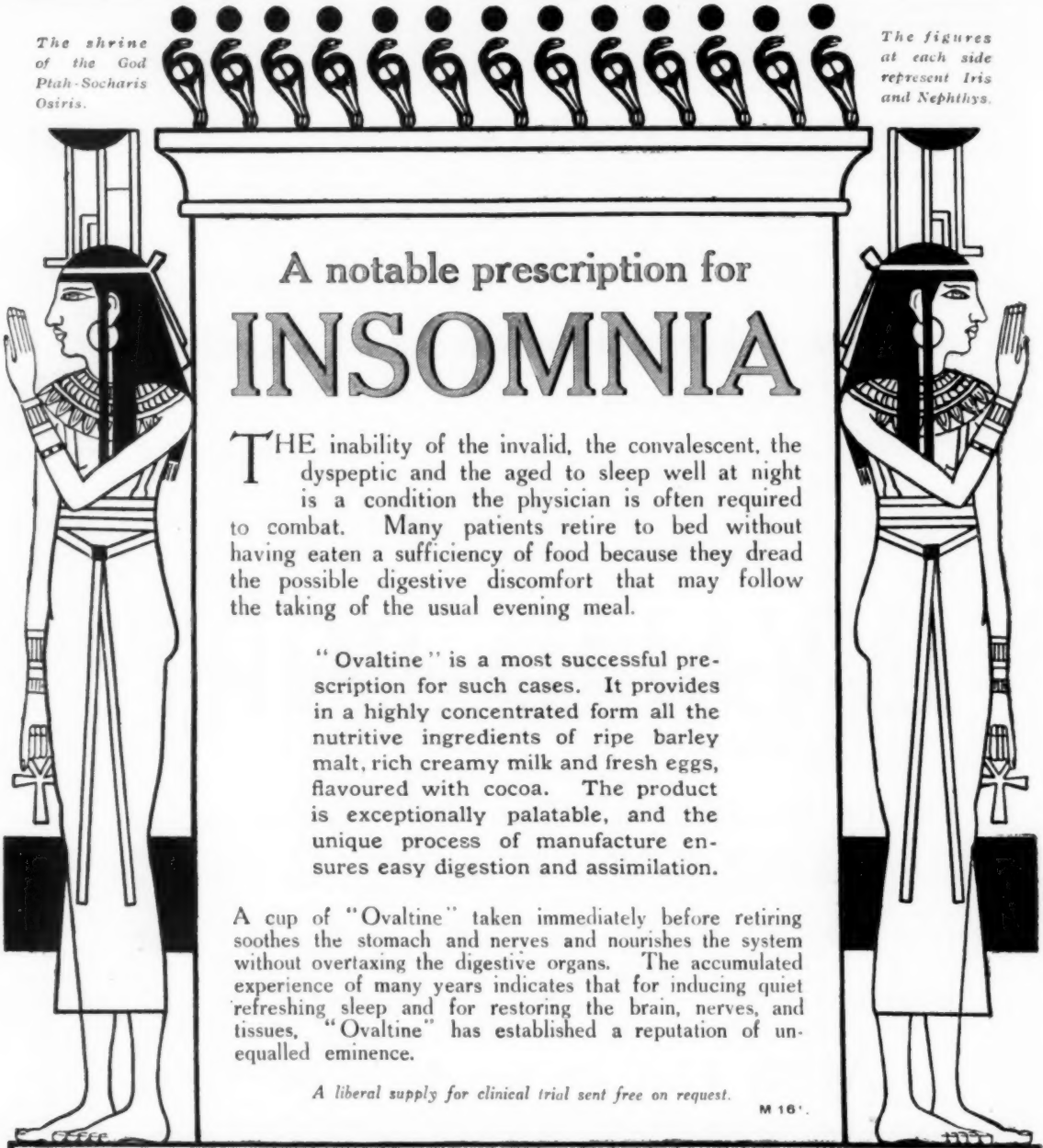
All our wines are pure foreign varieties of the highest quality, but to ensure complete satisfaction look for the guarantee signature.

W. & A. Gilbey Ltd.

WINE GROWERS AND DISTILLERS.

The shrine of the God Ptah-Socharis Osiris.

The figures at each side represent Iris and Nephthys.



A notable prescription for

INSOMNIA

THE inability of the invalid, the convalescent, the dyspeptic and the aged to sleep well at night is a condition the physician is often required to combat. Many patients retire to bed without having eaten a sufficiency of food because they dread the possible digestive discomfort that may follow the taking of the usual evening meal.

"Ovaltine" is a most successful prescription for such cases. It provides in a highly concentrated form all the nutritive ingredients of ripe barley malt, rich creamy milk and fresh eggs, flavoured with cocoa. The product is exceptionally palatable, and the unique process of manufacture ensures easy digestion and assimilation.

A cup of "Ovaltine" taken immediately before retiring soothes the stomach and nerves and nourishes the system without overtaxing the digestive organs. The accumulated experience of many years indicates that for inducing quiet refreshing sleep and for restoring the brain, nerves, and tissues, "Ovaltine" has established a reputation of unequalled eminence.

A liberal supply for clinical trial sent free on request.

M 16'.

OVALTINE

TONIC FOOD BEVERAGE

A. WANDER, Ltd., 45 Cowcross Street, London, E.C.1.

Works: King's Langley, Herts.

Elixir of Enzymes

LABORATORY PRODUCTS

"ARMOUR"

A PALATABLE PREPARATION of the proteolytic and curdling ferments that act in acid medium, recommended as an aid to digestion and as a gastric tonic generally.

Elixir of Enzymes is of special service in correcting faulty proteid metabolism, which is one of the principal causes of auto-intoxication.

Elixir of Enzymes is an excellent adjuvant and vehicle for exhibiting iodides, bromides, salicylates, and other drugs that disturb the digestive functions. One drachm of Elixir Enzymes will carry 46 grains of potassium iodide or 45 grains of sodium salicylate or 17 grains of potassium bromide.

For minimising the organic disturbances and eliminating the corrosive effect of potassium iodide on the mucous membrane of the stomach, as well as disguising the taste, the following combination is recommended: Potassium Iodide, 2 oz. Distilled water, enough to make 2 fluid ounces.

To exhibit, for instance, 20 grains of potassium iodide three times daily, use one teaspoonful of Elixir of Enzymes, one teaspoonful of the above solution to half pint of lukewarm milk; stir thoroughly and let stand until cool. Take one-third of this quantity as a dose. This junket should be made up fresh every morning.

Elixir of Enzymes will prove very beneficial in general digestive disturbances, especially at this season.

Supplied in 8 oz. and 16 oz. bottles.

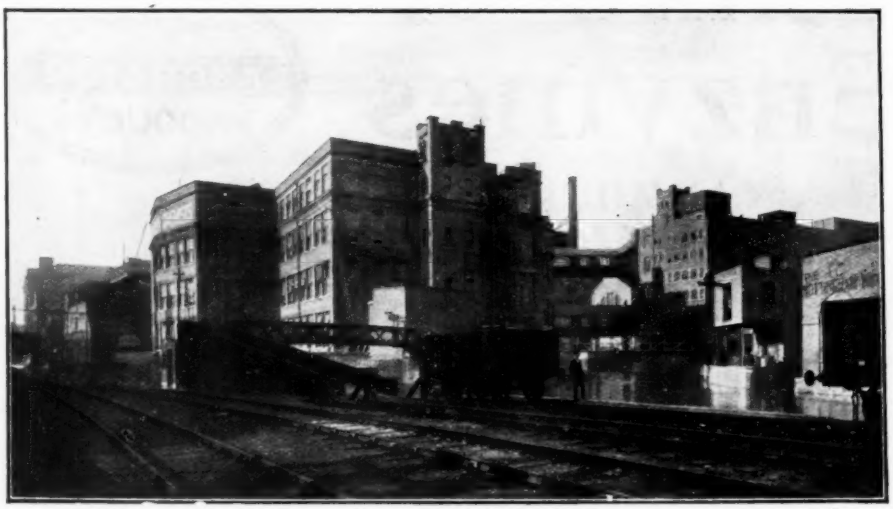
Samples and Literature sent to Medical Men on Application.

ARMOUR AND COMPANY LIMITED

QUEEN'S HOUSE, KINGSWAY,

LONDON, W.C.2.

Telegrams: "Armorum, Westcent, London." **Telephone: Holborn 5900.**



Flavine Antiseptics

ACRIFLAVINE—BOOTS ▫ PROFLAVINE—BOOTS

1917 "A powerful antiseptic, most active in the presence of serum."
"Toxic to organisms, harmless to tissues."
British Medical Journal, Jan. 20/17, pp. 73-80.

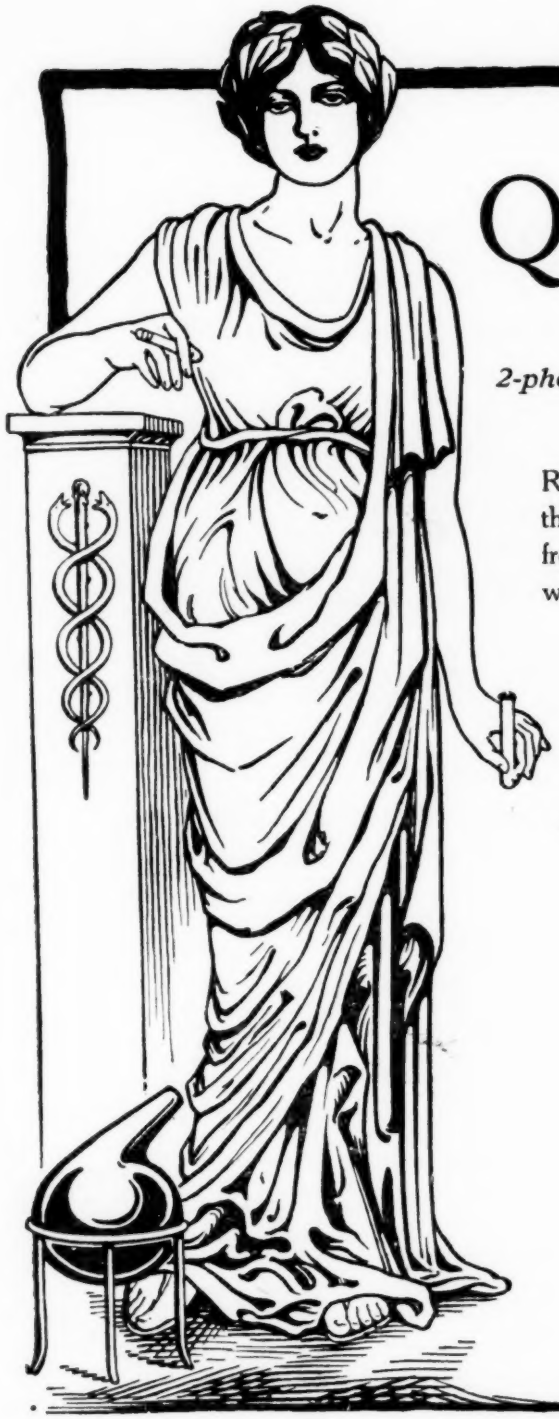
1919 "Lavation with Acriflavine the most satisfactory routine treatment for gonorrhœa."
British Medical Journal, May 17/19, pp. 571-572.

1921 "Possess much more bactericidal action in comparison with their toxicity for tissue than any other substances hitherto investigated."
"Similar value attached to their use in gonorrhœa."
British Medical Journal, Oct. 29/21, pp. 695-699.

Literature sent to Medical Men on application.

BOOTS PURE DRUG COMPANY LTD.
Manufacturing Chemists and Makers of Fine Chemicals
NOTTINGHAM

Telephone—3160 NOTTINGHAM. *Telegrams—"DRUG, NOTTINGHAM."*



Quinophan

(EVANS')

2-phenyl-quinoline-4-carboxylic-acid.

Recommended as a specific in the elimination of Uric Acid from the system, in addition to which it has valuable analgesic properties

ITS USE IS INDICATED IN

ARTICULAR RHEUMATISM
ACUTE GOUT
ARTHRITIS
SCIATICA, Etc.

ONE MEDICAL MAN SAYS:
"Results are most encouraging";

ANOTHER:
"I must confess I was surprised at the marvellous effect in cases which have not yielded to usual treatment";

AND ANOTHER *always orders a large quantity every time he comes to see us.*

Write for Sample and Prices

EVANS SONS LESCHER & WEBB LTD.

56 HANOVER STREET
LIVERPOOL

NEW YORK

60 BARTHOLOMEW CLOSE
LONDON, E.C. 1

17

Vitamines for the Debilitated

A combination of concentrated active vitamine extracts derived from several natural sources is now available for therapeutic administration under the name of METAGEN.

The presence and activity of the following vitamines in Metagen is determined by **physiological tests** on animals

Vitamine A—the fat-soluble vitamine normally present in milk, butter, cod-liver oil and certain plants.

Vitamine B—a water-soluble vitamine found abundantly in yeast, nuts, and the pericarp and germ of grains.

Vitamine C—the water-soluble vitamine of citrus fruits and certain vegetables.

Parke, Davis & Company

Beak Street, Regent Street

London, W.1.

The administration of Metagen is indicated in all cases of vitamine deficiency—rickets, scurvy, malnutrition, marasmus and other disorders of metabolism and nutrition.

It is a valuable adjuvant in the dietetic treatment of tuberculosis, anæmia, and the asthenia incident to the convalescence from acute infections.

Metagen is supplied in bottles of fifty capsules.

The dose for an adult is one to two capsules three times a day. Children require less, in proportion to their age.

An illustrated booklet descriptive of the Vitamines and their therapeutic value will be sent to physicians on receipt of request.

'BYNIN' Amara

"A Distinct Advance on Easton's Syrup."

——*The 'Lancet.'*

'Bynin' Amara is an analogue of the well-known Easton's Syrup, but it is therapeutically much superior to that preparation. The syrup is replaced by 'Bynin,' pure active Liquid Malt, which affords a far better vehicle than the former, as it is actively digestive and nutritive. An added advantage is that the nauseous flavour of Easton's Syrup is effectively masked, whilst there is no possibility of sugar crystallising out and carrying down with it the active alkaloidal principles.

Further particulars and free sample will be sent on request.

Allen & Hanburys Ltd.

37 Lombard Street, LONDON, E.C. 3.

Composition

	grains
Quinine Phosphate	1½
Iron Phosphate	2
Nux Vomica Alkaloids equal to Strychnine Phosphate	1/16
'Bynin,' Liquid Malt	1 oz.

PIONEERS AND EMPIRE BUILDERS: No. 154
FIFTH PERIOD—circa 6000 to 2000 B.C.

The Ideal Sweetening Agent
when Sugar is undesirable

TRADE MARK 'TABLOID' BRAND

TRADE 'SAXIN' MARK

Free from metallic taste and of unvarying sweetness. Each gr. 1/4 product equals in sweetening power two small lumps or one very large lump of the finest cane sugar.

Undergoes no change in the system.

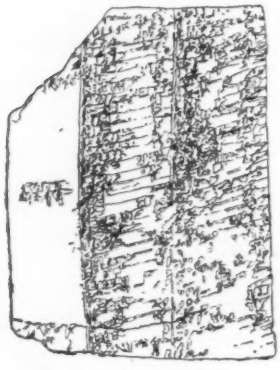
Reduced facsimile

Issued to the Medical Profession, in bottles of 100, 200 *and* 500, *at* **1/4**, **2/6** *and* **5/10** *per bottle*

BURROUGHS WELLCOME & CO., LONDON
NEW YORK MONTREAL SYDNEY CAPE TOWN MILAN
SHANGHAI BUENOS AIRES BOMBAY

All communications intended for the Head Office should be addressed to SNOW HILL BUILDINGS, LONDON, E.C. 1
London Exhibition Room: 54, Wigmore Street, W.

CLAY TABLET BEARING THE OLDEST LAWS KNOWN.—From a large diorite stele (discovered during the present century) inscribed with the Laws of Hammurabi we gained a very complete knowledge of Babylonian law. More recently, however, the fragment here reproduced of a clay tablet bearing an earlier portion of this code, written in Sumerian, has been found. The laws administered throughout the Babylonian empire are thus seen to be based upon the work of Sumerian pioneer legislators. Moreover, the Mosaic law was largely derived from Babylonian—and, therefore, partly Sumerian—sources. Our own European codes of to-day were thus influenced by laws enacted at a very early date in Mesopotamia. The obverse of the present tablet is quite undecipherable, from having been buried in earth impregnated with salts for more than 4000 years. The first two laws upon the reverse relate to accidental and intentional injury respectively, to a woman with child; in the former case the offender was fined ten shekels of silver and in the latter 1/3 of a mine of silver (20 shekels). The third law runs: "If a man in the undertaking of his mission get into difficulty and let the ship perish, the lord of ships shall determine its value and to his lordship he shall pay." The fourth law indicates the procedure in the case of the unfilial son: "If a son say unto his father and mother 'not my father, not my mother,' from the house, field, plantation, servants, property, animals, he shall go forth and his portion to the full amount his father shall give him. His father and his mother shall say to him 'not our son,' and from the neighbourhood of the home he shall go." It is interesting to observe that this particular piece of legislation introduces a legal aspect hitherto not taken into account in the explanation of the parable of the prodigal son. Two other of the laws deal with elopement and abduction.


Reverse

Date: Anterior to 2000 B.C.

COPYRIGHT

TRADE MARK 'SOLOID' BRAND

NASO-PHARYNGEAL (β-EUCAINE) COMPOUND

Unaffected by the Dangerous Drugs Act

Reduced facsimiles

Provides a convenient means of preparing a stimulating, antiseptic, analgesic and anæsthetic solution for sniffing up the nostrils or for use as a gargle or spray.

℞ *Sodii Chloridi*	... ...	*gr.* 7	(0·454 *gm.*)
Boracis	... ...	*gr.* 2-1/2	(0·162 *gm.*)
Acidi Borici	... ...	*gr.* 3/4	(0·049 *gm.*)
Sodii Benzoatis	...	*gr.* 1/2	(0·032 *gm.*)
Menthol	... ...	*gr.* 1/50	(0·0013 *gm.*)
Thymol	... ...	*gr.* 1/100	(0·00065 *gm.*)
β-Eucainæ Hydrochloridi,		*gr.* 1/6	(0·011 *gm.*)
Ol. Gaultheriæ		*min.* 1/20	(0·003 *c.c.*)

Issued to the Medical Profession, in bottles of 25 and 100, at 1/2 and 3/6 per bottle

BURROUGHS WELLCOME & CO., LONDON

H 2110

COPYRIGHT

INTESTINAL DISINFECTION

AS we continue to receive numerous enquiries for Trimethol, we beg once more to announce that this product, as originally introduced by Captain Ainslie Walker, has been withdrawn and replaced by his later and more efficient benzene derivative

Dimol

(Dimethylomethoxyphenol)

THE high endorsement which these intestinal bactericides have received at the hands of the profession, here and abroad, marks the recognition of a new epoch in the history of medicine.

INTESTINAL DISINFECTION IS AT LAST AN ACCOMPLISHED FACT.

Extract from BRITISH MEDICAL JOURNAL, *February 26th, 1916.*

"AS every medical man knows, intestinal sepsis is nowadays credited with being the fons et origo of many diseases that may at first sight appear to have little connection with it—rheumatoid arthritis, for example, and pernicious anæmia . . . . . offensive diarrhœa, enteritis, ulcerative enteritis, mucous colitis, and ulcerative non-amœbic dysentery are mentioned among the intestinal disorders in which the new drug proved strikingly effective."

Extract from AMERICAN MEDICINE, *September, 1915.*

"WITH the intestinal canal playing the part it does in the causation of so many diseases, the great need has been for an intestinal bactericide that would disinfect the canal and its contents, without the slightest toxic action. This need seems to be met by this new chemical product, and if this is established, another triumph for chemotherapy will be recorded."

Extract from THE LANCET, *April 9th, 1921.*

DIMOL : A NEW INTESTINAL DISINFECTANT.

(THE ANGLO-FRENCH DRUG CO., LTD., 238A, GRAY'S INN ROAD, LONDON, W.C.)

"The claims made for this new intestinal disinfectant are put forward on the favourable clinical experience of specialists in this country and in the United States. The preparation has been introduced by Captain Ainslie Walker. It is possible to destroy all bacteria in the fluid contents of the intestinal tract with a duodenal douche of dimol, but the dosage recommended in the form of tablets or pulverettes (2 to 4 after each meal) is so regulated that the *B. coli* normally present are not affected, a fact which can only be ascribed to their greater powers of resistance. In this way all apprehension of digestive disturbance by its administration is avoided. The chemical constitution of dimol, $C_6H_2(CH_3)_2(OCH_3)OH$, reveals the presence of a phenyl radical, but this is not split off in its passage through the intestine; in other words, dimol is voided with the fæces, unchanged. Examination for phenol in the urine after a week's course of treatment gives a negative result. Tests made for us confirm a coefficient of 35·0 and the freedom from toxicity claimed by the manufacturers."

Selling Agents :—

THE ANGLO-FRENCH DRUG CO., LTD.,
238a, Gray's Inn Road, LONDON, W.C.1.

Tested and Approved in Accordance with L.G.B. Requirements.

GALYL IS THE SAFEST OF ALL ARSENICAL COMPOUNDS IN SYPHILIS

Recurrent Fever, Malta Fever, Blackwater Fever, Framboesia, Sleeping Sickness, &c.

INTRAVENOUS—

GALYL "Ready" Solution in Ampoules, ready for use.

INTRAMUSCULAR—

GALYL in Glucose, ready for injection.

SPECIAL NOTE.—Galyl in these forms is perfectly stable.

HISTOGENOL

The TREATMENT of WASTING AFFECTIONS

Tuberculosis, Anæmia, Neurasthenia, Rickets, &c.

Concentrated Elixir Ampoules Granular Tablets

PLEASE WRITE FOR FORMULAS,

LITERATURE, CLINICAL REPORTS, and PRICE LISTS.

The ANGLO-FRENCH DRUG COMPANY, Ltd., 238a, Gray's Inn Road, LONDON, W.C.1.

Telephone: MUSEUM 4029. Telegrams: "AMPSALVAS, LONDON."

WEST END DEPOT:—**MODERN PHARMACALS, 48, Mortimer Street, W.1.** Telephone: MUSEUM 564.

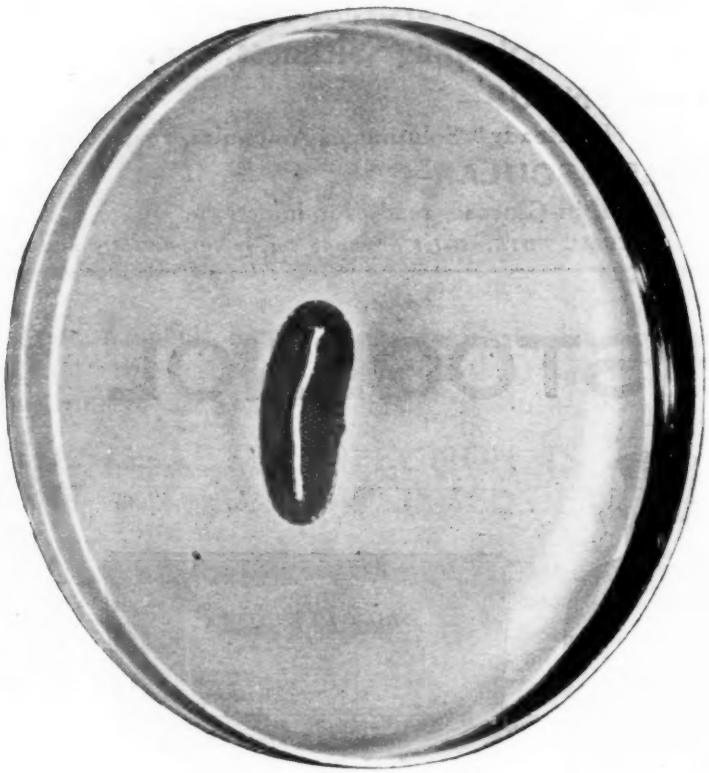
IRELAND: **FANNIN & CO., Ltd., Dublin. GRATTAN & CO., Ltd., Belfast.**

NEW YORK: **1270 BROADWAY.** MONTREAL: **ST. DENIS BUILDING.** PARIS: **5, RUE CLAUZEL.**

JAMAICA:—**Mr. A. NOEL CROSSWELL, 8-12, King Street, Kingston.** CAPE TOWN: **71, Long Street.**

INDIA:—**P.O. Box 460, Bombay. P.O. Box 86, Calcutta. P.O. Box 226, Madras.**

Direct bacteriological proof of the aseptic properties of London Hospital Catgut.



London Hospital Catgut

"A short length of sterile London Hospital Catgut was placed in Agar-Agar thickly sown with aerobic spores and incubated. The aseptic properties of the catgut not only prevented invasion by bacilli, but an area of infected Agar-Agar was rendered sterile to a distance of from 5 m.m. to 9 m.m."

An Invitation You are invited to visit the ligature laboratories of the London Hospital on any working day, entirely without warning, and see for yourself the unique conditions, as regards aseptic preparation, under which the gut is treated.

24 *See also page* 19]

Prices and descriptive literature, on request, from

Allen & Hanburys Limited
48 Wigmore Street, W.1.

EDISON
ACCUMULATORS
FOR X-RAY OUTFITS
AND FOR
CAUTERY AND
MASSAGE WORK

Edison Accumulators being made almost entirely of steel, are particularly suitable for operating electro-medical apparatus, as they contain no acid and will stand idle for an indefinite period without injury. They are lighter than lead batteries and have a much longer life.

EXTRACT FROM A DOCTOR'S LETTER
"I want the battery for all sorts of medical purposes. It is a necessity, and I object to depending on lead batteries in my work; they want so much attention."

EDISON ACCUMULATORS, LTD.,
15, UPPER GEORGE STREET, EDGWARE ROAD, W. 1.
Telephone: Paddington 5120 (6 lines). Telegrams: "Edibatt Edge, London."

GAS FIRE SCIENCE

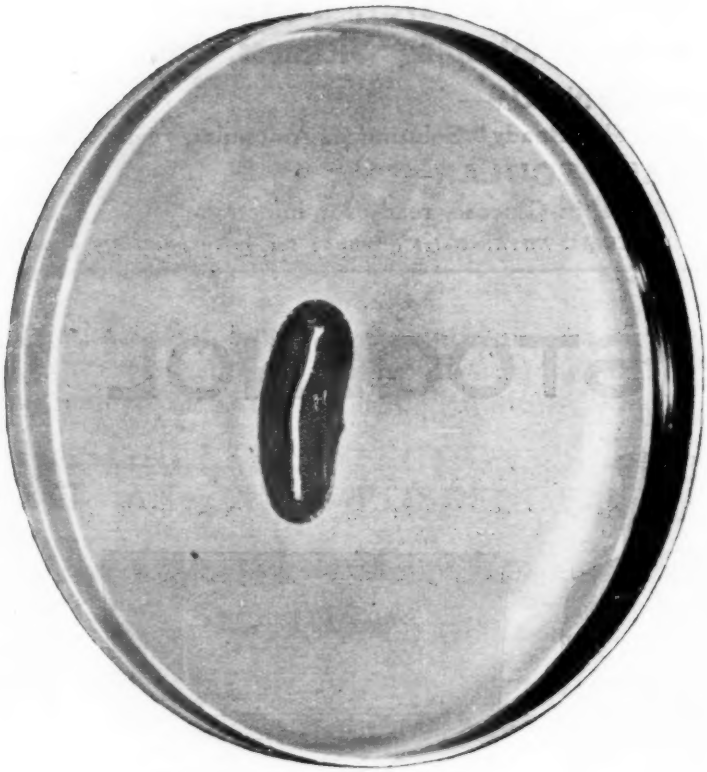
THE fundamental principles of gas fire construction to-day are: first, that the great proportion of the heat emitted shall be radiant, and therefore healthful, like that of the sun; second, that none of the products of combustion shall be allowed to enter the room, but, by reason of their "pull" up the chimney flue, shall keep the air in the condition of gentle motion necessary for health and comfort.

That is why medical and other scientists recommend the modern gas fire as a hygienic piece of apparatus.

Further information and Reports of Tests can be obtained from
THE BRITISH COMMERCIAL GAS ASSOCIATION
30 Grosvenor Gardens, S.W. 1.

IC 33

Direct bacteriological proof of the aseptic properties of London Hospital Catgut.



London Hospital Catgut

"A short length of sterile London Hospital Catgut was placed in Agar-Agar thickly sown with aerobic spores and incubated. The aseptic properties of the catgut not only prevented invasion by bacilli, but an area of infected Agar-Agar was rendered sterile to a distance of from 5 m.m. to 9 m.m."

An Invitation You are invited to visit the ligature laboratories of the London Hospital on any working day, entirely without warning, and see for yourself the unique conditions, as regards aseptic preparation, under which the gut is treated.

24 *See also page* 19]

Prices and descriptive literature, on request, from

Allen & Hanburys Limited
48 Wigmore Street, W.1.

EDISON
ACCUMULATORS
FOR X-RAY OUTFITS
AND FOR
CAUTERY AND MASSAGE WORK

Edison Accumulators being made almost entirely of steel, are particularly suitable for operating electro-medical apparatus, as they contain no acid and will stand idle for an indefinite period without injury. They are lighter than lead batteries and have a much longer life.

EXTRACT FROM A DOCTOR'S LETTER
"I want the battery for all sorts of medical purposes. It is a necessity, and I object to depending on lead batteries in my work; they want so much attention."

EDISON ACCUMULATORS, LTD.,
15, UPPER GEORGE STREET, EDGWARE ROAD, W. 1.
Telephone: Paddington 5120 (6 lines). Telegrams: "Edibatt Edge, London."

GAS FIRE SCIENCE

THE fundamental principles of gas fire construction to-day are: first, that the great proportion of the heat emitted shall be radiant, and therefore healthful, like that of the sun; second, that none of the products of combustion shall be allowed to enter the room, but, by reason of their "pull" up the chimney flue, shall keep the air in the condition of gentle motion necessary for health and comfort.

That is why medical and other scientists recommend the modern gas fire as a hygienic piece of apparatus.

Further information and Reports of Tests can be obtained from
THE BRITISH COMMERCIAL GAS ASSOCIATION
30 Grosvenor Gardens, S.W. 1.

IC 33

Santal Midy

FOR INTERNAL TREATMENT of GONORRHOEA, URETHRITIS, AND OTHER AFFECTIONS of THE GENITO-URINARY TRACT.

Santal Midy Capsules

have been prescribed with uniform success for over 30 years. Distilled from carefully selected Mysore Sandal Wood, the oil is bland and remarkably

FREE FROM THE IRRITANT AND NAUSEATING EFFECTS

which are provoked by many preparations.

There is marked absence of Gastric and other disturbances, diarrhœa and skin eruptions.

Its mild chemotactic properties permit its administration in relatively large doses without fear of too violent reaction or intolerance.

SANTAL MIDY CAPSULES

may be prescribed and **relied upon** in all stages of Gonorrhœa and in other forms of Urethritis and affections of the Genito-Urinary tract.

The capsules contain 5 drops, and usually 10 to 12 are given daily in divided doses.

Prepared in the **Laboratoire de Pharmacologie Generale, 8, Rue Vivienne, Paris,** and sold by most Chemists and Wholesale Druggists throughout the world.

PNEUMOSAN (Reg. Trade Mark)

Is a powerful and valuable agent in the treatment of Tuberculosis; it is a homogeneous chemical preparation applied by a series of intramuscular injections. Early cases generally clear up in thirty days, more advanced cases within sixty days. Its action is alterative, devoid of subjective symptoms, and, **though used in thousands of cases, never led to unpleasant or dangerous sequelæ.** Afebrile or febrile cases alike yield readily to its influence if the prognosis offers any chance of recovery.

Med. Supt. writes:—"I have given the preparation to some 50 cases. In no instance has any harm resulted, and no irritation has occurred at the site of the injection. In early and in advanced cases I had some striking results." (See LANCET, March 3rd, 1912, page 897.) *Vide* also LANCET of 8th of August, 1914 (page 372), and 11th December, 1915 (page 1295).

Write for Literature. **Sole Manufacturers:**

THE PNEUMOSAN COMPANY, 307, Euston Rd., London, N.W

Telephone: MUSEUM 1191.

As Supplied to H.R.H. The Princess Royal of England and H.R.H the Crown Princess of Sweden.

HUMANIZED MILK

PREPARED ONLY BY

THE AYLESBURY DAIRY CO. Ltd.,

31, ST. PETERSBURGH PLACE, BAYSWATER, W.

Telephone No.: "PARK 226."

SAMPLES FREE to the MEMBERS of the MEDICAL PROFESSION

AMBRIODIN

(CENTAUR)

IN THE TREATMENT OF

EPILEPSY

has proved of remarkable value. It quickly reduces the attacks without the undesirable effects invariably accompanying the administration of Potassium Bromide. The patient's general health is not impaired, but distinctly IMPROVED.

Each Tablet contains:—5 grs. (0·32399 gm.) Ammonium Bromide 1 gr. (0·064798 gm.) Potassium Iodide, with suitable Laxatives and Tonics.

The preparation in TABLET form is quite TASTELESS, easily ASSIMILABLE, and perfectly SAFE.

Vide: **THE LANCET,** Vol. I. (1920), No. XX., pp. 1074, May 15th.
THE MEDICAL PRESS, Vol. CLX. (1920), No. 4225, April 28th.
THE PRACTITIONER, July, 1920.

AMBRIODIN (Centaur) is NOT *advertised to the public.*

FULL PARTICULARS AND LITERATURE FROM—

The CENTAUR CHEMICAL CO., Ltd.,

BASSISHAW HOUSE, BASINGHALL ST., LONDON, E.C. 2.

WEST-END DEPOT:—**14, CLIFFORD ST., LONDON, W. 1.**

LINCTUS HEROIN CO.

— Gale's —

A useful and efficacious combination of Heroin with EXPECTORANTS and DEMULCENTS.

Dose: One to two fluid drachms, diluted with a little water.

LINCTUS TUSSI *sine* OPIO.

— Gale's —

An Excellent soothing expectorant for Children. Transparent, very agreeable, readily taken.

Dose: From half to one teaspoonful when cough is troublesome.

CONFECT. PARAFFINI AROMAT.

— Gale's —

A palatable preparation of "Paraffinum" specially purified for internal administration.

It is readily taken by children in doses of from one to two teaspoonfuls, and also by ladies in increased doses according to age, etc.

Price List and Pill Catalogue on Application.

GALE & COMPY., Ltd.,

WHOLESALE CHEMISTS AND DRUGGISTS. (*Estab. 1786*).

15, BOUVERIE ST., FLEET ST., LONDON, E.C.

Tel. Ad.: "DREADNOUGHT, LONDON." 'Phone: 898 HOLBORN.

Prepared from the Original Formula Of Sir A. B. GARROD.

R. HOGG & SON, 1, Southwick Street, W.

HOGG'S LITHIA WATERS

Sold in Bottles and Syphons.

PHENOQUIN

(Phenyl-Cinchoninic Acid)

is specific in the elimination of uric acid from the system. It is the original British product.

Phenoquin has proved exceptionally efficacious in acute Gout, chronic Gout, and other forms of Arthritis, causing a remarkably rapid increase in uric acid excretion.

Phenoquin has also proved its value in acute articular Rheumatism and Sciatica. Dosage—5-15 tablets daily. Descriptive circular for Medical men post free on application.

Packed in bottles of 50 and 100 tablets. Price 6/- & 11/-

SOUTHALL BROS. & BARCLAY, Ltd., Birmingham.

'Good as Gold'

BABY FOOD

Every baby that develops under your care into a healthy, happy child means an addition to your professional reputation. No Baby Food would help you in your work like "GOOD AS GOLD" Baby Food. Made with fresh milk as directed—it is practically **human** milk—all the constituents in their exact proportion. MADE IN A MINUTE.

Manufactured in Bath, under hygienic conditions by a new scientific process and from purest ingredients. Price 2/10 per tin. Obtainable of all the leading Stores.

Further particulars and Sample Tin sent on request.

MANUFACTURERS—

AUSTEN FOODS LTD., BATH,
London Office: 3, Gerrard Street, London, W.1.

Sole Makers of "Good as Gold" Baby Food and "Valeda" Invalid Food.

ESSENTIAL IN THE SICK ROOM.

Brand's Essence

of BEEF, MUTTON or CHICKEN

consists solely of the juice of the finest meats; prepared with the greatest care under the most hygienic and cleanly conditions.

Easily digested and assimilated.

All Chemists and Stores.

BRAND & Co., Ltd.,
Mayfair Works, Vauxhall,
LONDON, S.W.8.

KEROL

KEROL combines all the properties which go to the making of an ideal preparation.

It has been shown to be practically non-toxic, non-irritant and non-corrosive—a combination of properties which make it the one preparation which can be used with perfect confidence wherever the use of either a disinfectant or antiseptic is indicated. It is of high and definite germicidal value and is perfectly homogeneous

KEROL is highly recommended by Bacteriologists and by prominent members of the Medical Profession.

KEROL CAPSULES

INTESTINAL. These are of great value where intestinal antisepsis is indicated. In a comparatively short space of time the coli content of the intestine is reduced by over 99 per cent. They are non-irritant and perfectly safe

STOMACHIC. For use in cases of stomach fermentation and other gastric troubles, and are of great value in reducing the number of malign organisms prior to administration of treatment with lactic ferments, i.e., sour milk, etc.

Samples and literature sent free to any Medical Practitioner

KEROL Ltd.,
(Successors to Quibell Bros. Ltd.)
153 Castlegate
NEWARK

GOLD MEDAL, INTERNATIONAL CONGRESS OF MEDICINE, LONDON, 1913.

"MIST. PEPSINÆ CO. c. BISMUTHO"

(HEWLETT'S).

COMPOSITION.—Pepsin, Bismuth, Sol. Opii Purif., Hydrocyanic Acid (B.P.), Tinct. Nux Vomica, &c.

An elegant preparation, miscible with water, invaluable in Gastric Catarrh, Pyrosis, Carcinoma, and all Forms of Atonic and Irritative Dyspepsia.

DOSE: Half to One Fluid Drachm Diluted.

Packed, for dispensing only, in 10, 22, 40, and 90-oz. Bottles.

Price in England, 12/6 per lb.

Physicians will please write "Mist. Pepsinæ Comp. (Hewlett's)."

INTRODUCED AND PREPARED ONLY BY

C. J. HEWLETT & SON, LTD., Wholesale & Export Druggists,

35 to 42, CHARLOTTE STREET, LONDON, E.C.

Have you in your Practice cases of:

Asthma

Chronic Bronchitis

Affection of the Lungs

"Gassing"?

Try **PORAL**

PORAL is presented in the form of dragées, containing:

Colloidal Sulphur, a specific for chronic disorders of the mucosa of the respiratory organs, on the surface of which it produces sulfo-hydrates and sulphides in their nascent state;

Bencinnozal, a new compound, based on sodium benzoate and cinnamate, which participates in the aromatic and antiseptic properties of benzoin and essence of cinnamon;

Polyacol, a skilful combination of carbonate and phosphate of the monomethylic ether of pyrocatechin and of sulfogaiacolate of potassium

Anemone pulsatilla, an excellent sedative of the respiratory organs and an anticatarrhal agent;

Lobelia inflata, an antiasthmatic expectorant and antidyspnœic agent;

Drosera rotundifolia, an antispasmodic agent, employed from time immemorial by the natives of North America;

Sisymbrium officinale, a bechic stimulant, known by the Ancients under the name of "Singer's Herb";

Eucalyptus globulus, a balsamic anticatarrhal and antiseptic agent;

Terebilen hydrate, a powerful alterative of the bronchic secretions, which it liquefies, thus facilitating expectoration;

Convallaria maialis, a cardiac tonic, which regulates and re-enforces the contractions of the heart without appreciably increasing the arterial pressure.

Write for Free Sample and Literature to

M. E. BOUSSARD, 7, Paddington Street, London, W.1.

Agent for Les Établissements Chatelain, 2, rue de Valenciennes, Paris.

ETABLISSEMENTS ALBERT BUISSON, 157, Rue de Sèvres, PARIS (XV^e).

HEMOTONINE Assimilable Painless — ***Blood tonic injection*** Box of 12 ampoules 1 cc.= { Iron et Sodium. Methylarsenate..... 5 cgr. Strychnia (glyceroph.) 1 mgr.

INDICATIONS : **ANÆMIA — CHLOROSIS — MALARIA,** etc.

Hemotonine = Hemotoninde in India. — SOLE AGENTS : **MADON SONS & C°**, Chemists, **BOMBAY**

Indicated in the treatment of Cardiac Valvular Lesions, Exophthalmic Goitre, Cardiac Neuroses, Dropsy resulting from Chronic Parenchymatous Nephritis, Scarlatina, Hepatic Cirrhosis, &c., Albuminuria in Pregnancy, &c.

Anasarcin TRADE MARK

Samples and Literature to the Medical Profession on request to THOMAS CHRISTY & Co., 4/12, Old Swan Lane, London, E.C. 4.

Distributors for British Isles.

Advertised to the Medical Profession only.

THE ANASARCIN CHEMICAL Co., Winchester, Tenn., U.S.A.

Agents for India: **SMITH, STANISTREET & CO., Ltd., Calcutta.**

CAPSICUM

"GAMGEE TISSUE"

Sole Proprietors and Manufacturers:

ROBINSON & SONS, Limited, Chesterfield.

VITAMINES

Biological experiments conducted in a prominent research laboratory have proved the presence of the three principal Vitamines

IN VITMAR

Manufactured only by

CALLARD & Co., Food Specialists

74, Regent Street, London, W. 1.

Eliminates toxins, a—

Mustard Bath

A bath to which is added a couple of table-spoonfuls or so of COLMAN'S MUSTARD, or the contents of a carton of specially prepared BATH MUSTARD

CALLARD'S DIABETIC FOODS

ARE

RELIABLE

SEND FOR SAMPLES AND ANALYSES.

Patients receive every attention.

CALLARD & CO. (Food Specialists)

(Callard, Stewart & Watt Ltd.),

74, Regent Street, LONDON, W. 1.

Established over 50 years.] [Telephone No.: 505 Museum.

BRUCE, GREEN & Co., LTD.

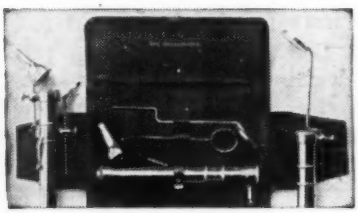
MANUFACTURING OPTICIANS & MAKERS OF ELECTRICAL APPLIANCES FOR EXAMINATION OF EYE, EAR, NOSE & THROAT.

14, 16, & 18, BLOOMSBURY ST., LONDON, W.C.

Ophthalmology and Refraction taught by one who has been giving instruction to Medical Practitioners for 20 years.

References can be supplied from a list of over 1,000 Medical Practitioners who have availed themselves of the Course.

We make no charge for the Course of Instruction.



Price 21/-. Postage 6d.
Stocked by all Surgical Instrument Makers.

(DEES) AURORASCOPE (REGD. PATENT)

The G.P. POCKET THROAT AND EAR OUTFIT.

A NOVICE can see at the bedside, in daylight, the Vocal Cords, Drum of the Ear, Optic Disc, Transillumination of the Antrum and Sinuses, and everything in the range of Rhinology, Ophthalmology Laryngology, and Aural Surgery. Certified correct by Specialists and Leaders of the profession,

PRICES: Best Quality Outfit in Silk lined Case or Leather Wallet with Spherical Lens Attachment, complete and recommended, £2/2/0. Registered Post 9d.
Second Quality, without Magnifying Lens Attachment, £1/1/0. Reg. Post 6d.
Adaptor, Flex Wire (Conversion), including Special Battery for four hours' permanent lighting, 12/6.

AURORASCOPE CO., Ltd., Fulwood House, Fulwood Place, Holborn, W.C.
(next to Chancery Lane Tube Station) where demonstrations are given daily.

EMINENT MEDICAL MEN

say that rigid foot-plates are injurious and are prescribing for Tired Feet and Weak Insteps

THE SALMON ODY

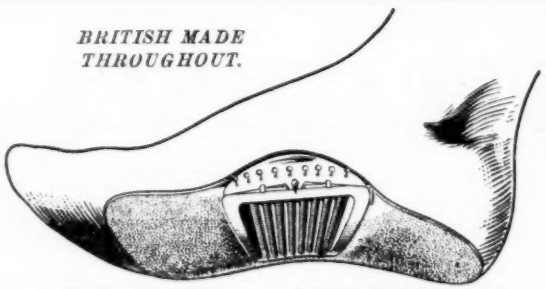
Spiral Spring Adjustable

ARCH SUPPORT

MADE BY

SALMON ODY, LTD.,
(Established 120 years),
7, New Oxford St., LONDON, W.C. 1. ['Phone: Museum 3805.

BRITISH MADE THROUGHOUT.



Ordinary 15/6 per pair. Metatarsal 18/6 per pair.

Write for Descriptive Circular.

THE "BARTON" SPHYGMOMANOMETER

possesses the great advantages of being a very active and reliable instrument, extremely light and portable, and always ready for use, those absolute essentials for the apparatus of a busy Medical Practitioner.

Will be sent on 14 days' approval.

Price £4 4 0

DESCRIPTIVE PAMPHLET FREE ON APPLICATION.

SURGICAL MANUFACTURING CO. LTD., 83-85, MORTIMER STREET, LONDON, W. 1.

PERFECTOS

No. 2

Virginia Cigarettes.

JOHN PLAYER & SONS beg to draw the attention of connoisseurs to "PERFECTOS" No. 2 Cigarettes. They are distinguished by a superb delicacy, the result of a matchless blend of the Finest Virginia Tobacco.

"PERFECTOS FINOS" are a larger cigarette of the same quality.

JOHN PLAYER & SONS, NOTTINGHAM.

Branch of the Imperial Tobacco Co. (of Great Britain and Ireland), Ltd.

P205

GREAT SAVING IN PURCHASING

I. ISAACS & CO.'S

well-known

DISPENSING BOTTLES

VIALS and BLUE POISONS,

at Lowest Market Prices.

PROMPT ATTENTION TO COUNTRY ORDERS.

Good Stock of all kinds.

THE NORTH LONDON GLASS BOTTLE WORKS,

106, MIDLAND ROAD, LONDON, N.W.1.

Established 100 years.

'Phone: MUSEUM 4209. Telegrams: ISAGLASBOT KINCROSS LONDON.

REICHERT

MICROSCOPES

MICROTOMES,

POLARISING and PROJECTION APPARATUS,

PHOTOMICROGRAPHIC APPARATUS,

OBJECTIVES and ACCESSORIES.

APPLY TO

SOLE AGENTS FOR GREAT BRITAIN,

O. C. RUDOLPH & BEESLEY,

65, MARGARET STREET,

OXFORD CIRCUS, LONDON, W.1.

BOTTLES.

DISPENSING BOTTLES. Poisons and White Vials.

SPECIAL REDUCED PRICE LIST ON APPLICATION.

W. SMITH, 169/170, Railway Arches, Braintree St., Cambridge Rd., MILE END, E.

Bottle Manufacturers, Estd. 1880. TELEPHONE NO.: CENTRAL 13647

TAYLOR'S FOR TYPEWRITERS

DESKS & TABLES

74, CHANCERY LANE, HOLBORN, LONDON

and at 92, Queen Street, E.C. 4

HIRE BUY, EXCHANGE, REPAIR, AND SELL

EASY HIRE PURCHASE.

all makes of Typewriters and Duplicators. Authors' MSS. and Circular Letters typed by return of post.

Write Dept. 26. Tel.: Holborn 4810.

ADDING MACHINES. Temporary Typists Sent Out. *Estd 1884*

VACCINES

AUTOGENOUS AND STOCK.

In bulk or in graduated doses.

Apply, SECRETARY,

LABORATORIES OF PATHOLOGY & PUBLIC HEALTH,

6, HARLEY STREET, LONDON, W. 1.

CULTURE MEDIA.

Freshly Prepared and Standardised Weekly.

In Tube or in Bulk.

Apply

LABORATORIES OF PATHOLOGY & PUBLIC HEALTH,

6, HARLEY STREET, LONDON, W.

REAGENTS FOR WASSERMANN REACTION

STANDARDISED and supplied in Ampoules, Ready for Use.

AS USED IN THESE LABORATORIES.

For Prices and particulars apply to SECRETARY,

LABORATORIES OF PATHOLOGY & PUBLIC HEALTH,

6, HARLEY STREET, W. 1.

DR. CHAUMIER'S

GLYCERINATED AND REINFORCED CALF LYMPH.

THE CHEAPEST AND MOST ACTIVE LYMPH.

PREPARED under the MOST MINUTE ANTISEPTIC PRECAUTIONS

Supplied in Tubes, sufficient to vaccinate 1 or 2 persons, at 8d. each; 10 persons at 1s. 3d. each, 25 persons at 2s. 3d. each. Collapsible tubes for 40 vaccinations 3s. 9d. each. Postage and packing 2d. each extra.

ROBERTS & CO., 76, New Bond St., LONDON, W

POST-GRADUATE TEACHING IN GYNÆCOLOGY.

LONDON SCHOOL OF GYNÆCOLOGY, HOSPITAL FOR WOMEN

SOHO SQUARE, LONDON.

The Hospital practice is open to a limited number of Graduates, who may attend Out-patients. In addition there are three special Courses of Gynæcology, each of six weeks' duration, in the year. The Course consists of Instruction in Out-patients, attendance at operations, Clinical Lectures on important Gynæcological conditions, demonstrations of rare cases, classes in Pathology and instruction in X ray treatment. The Course commences on Monday, Jan. 16th, and the class is limited to nine Graduates. Fee 10 guineas. For particulars apply to The DEAN, SIDNEY FORSDIKE, M.D., F.R.C.S., Hospital for Women, Soho Square.

THE CHARTERED SOCIETY OF MASSAGE AND MEDICAL GYMNASTICS

Examinations will be held during 1921 in MASSAGE, MEDICAL GYMNASTICS, and MEDICAL ELECTRICITY, and for TEACHERS' CERTIFICATES. TRAINING COURSES, 12-15 months; TEACHERS', 2 years.

For the benefit of Masseuses and Masseurs holding Certificates other than I.S.T.M. prior to June 9th, 1920, TEST EXAMINATIONS in MASSAGE and other subjects are arranged. Conditions of entry supplied to applicants.

All Examinations are held in London, and also in Dublin, Manchester, Glasgow or Edinburgh, and Bristol, when there are sufficient (30) entries

The Society is approved by the Medical Profession, and its certificate-holders work only under medical direction. The Certificate of the Society is a qualification accepted by the Admiralty, War Office, Ministry of Pensions, and the British Red Cross Society.

Apply to the Secretary, C.S.M.M.G., 157, GREAT PORTLAND STREET, LONDON, W. 1. *Telephone: Langham* 1893.

BETHLEM ROYAL HOSPITAL,

LAMBETH ROAD, S.E.1.

A COURSE OF

LECTURES and PRACTICAL INSTRUCTION

FOR THE

DIPLOMA IN PSYCHOLOGICAL MEDICINE

(of the UNIVERSITIES of LONDON, CAMBRIDGE, DURHAM, &c.)

WILL BE GIVEN at the above Hospital, commencing the end of JANUARY, 1922.

For Syllabus and further particulars apply to the Physician-Superintendent.

Seamen's Hospital Society

LONDON SCHOOL OF TROPICAL MEDICINE,

ENDSLEIGH GARDENS, N.W.1.

Sessions will commence 9th January, 24th April, and 25th September approximately.

For Prospectus and further particulars apply to the Secretary, London School of Tropical Medicine, Endsleigh Gardens, N.W., or to the Head Office, Seamen's Hospital, Greenwich, London, S.E.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL AND MIDWIFERY TRAINING SCHOOL, Marylebone, N.W.1.

MEDICAL STUDENTS and QUALIFIED PRACTITIONERS admitted to the Practice of this Hospital. Unusual opportunities are afforded of seeing Obstetrical Complications and Operative Midwifery about one-half of the total admissions being primiparous cases.

PUPILS TRAINED FOR MIDWIVES AND MATERNITY NURSES

On being found competent each pupil is awarded a certificate of efficiency. SPECIAL PREPARATION FOR EXAMINATION OF CENTRAL MIDWIVES BOARD.

CERTIFICATES AWARDED as required by the various Examining Bodies.

For rules, fees, &c., apply ARTHUR WATTS, Secretary.

CITY OF LONDON MATERNITY HOSPITAL

(formerly City of London Lying-in Hospital)

MIDWIFERY SCHOOL, City Road, E.C.1.

MEDICAL STUDENTS admitted to HOSPITAL PRACTICE, with Operative Midwifery and Obstetrical Complications.

PUPILS TRAINED as MIDWIVES and MONTHLY NURSES in accordance with Central Midwives Board regulations.

CERTIFICATES awarded as required by Examining Bodies.

PRIVATE WARDS for PAYING PATIENTS.

For prospectus apply to RALPH B. CANNINGS, Secretary.

POST-GRADUATE COLLEGE, WEST LONDON HOSPITAL

Hammersmith-road, W.—For Prospectus apply the Dean.

ST. MARY'S HOSPITAL MEDICAL SCHOOL

(University of London).

PRIMARY F.R.C.S. COURSE.

A Course of Instruction for the June Examination will begin on MONDAY, JANUARY 23rd, 1922, and will be conducted as follows—

Anatomy and Embryology—Prof. Frazer, F.R.C.S.

Physiology and Histology—Prof. Collingwood, O.B.E., M.D. (including a Practical Course of Physiological Chemistry.)

Time Table and particulars may be obtained from the School Secretary. C. M. WILSON (*M.C.*), M.D., F.R.C.P., Dean.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.

PADDINGTON, W.2.

(University of London.)

FINAL F.R.C.S. COURSE.

A Course of Instruction for the May Examination will begin on WEDNESDAY, FEBRUARY 1ST, 1922, and will be conducted as follows:—

Mr. Clayton-Greene ..	Clinical Surgery, cases selected in
Mr. Maynard Smith ..	Wards.
Mr. Fitzwilliams ..	Tutorial Classes, Demonstrations
Mr. Zachary Cope ..	of Museum Specimens, and
Mr. Pannett	Selected Cases in the O.P.
Mr. Bryan	Department.
Mr. Bourne	Surgery of Female Pelvis.
Mr. Kenneth Lees ..	Surgery of Ear, Nose, and Throat.
Mr. Handfield-Jones ..	Commentaries on Selected Cases and Clinical Demonstrations.
Professor Frazer ..	Surgical Anatomy.
Dr. Kettle	Surgical Pathology and Histology.
Dr. Freeman	Immunity and Bacteriology.

A Course of Operative Surgery will be held in APRIL.

Fee £18 18s., exclusive of Operative Surgery.

Time table on application to the School Secretary.

C. M. WILSON (*M.C.*), M.D., F.R.C.P., Dean.

Guy's Hospital Medical School,
London Bridge, S.E. 1.

PRIMARY F.R.C.S. COURSE.

A Course of Instruction for the June examination will commence on Tuesday, January 17th, 1922, at 10 A.M.

Anatomy.—Professor T. B. JOHNSTON.
Physiology.—Professor M. S. PEMBREY.

Fee: £11 4s. for each subject.

For further particulars, apply to the Dean, Guy's Hospital, London Bridge, S.E. 1.

St. John's Hospital for Diseases of THE SKIN,
49, LEICESTER-SQUARE, W.C. 2.

A Course of Practical Instruction in the BACTERIOLOGY, MYCOLOGY, and HISTO-PATHOLOGY of the SKIN will be held in the Laboratories of the London School of Dermatology, St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C. 2, commencing the second week in January.

Fees for twelve weekly sessions, 4 guineas (Tuesday or Friday afternoons, 2 to 4 P.M.).

There are also facilities in the Laboratories for more advanced work and for Research work.

Applications should be made to the Secretary.

St. Thomas's Hospital.
CLINICAL MEDICAL UNIT.

POST-GRADUATE COURSE IN NEWER METHODS OF CLINICAL INVESTIGATION.

A Special Practical and Systematic Course dealing with recent methods of investigation in such conditions as Albuminuria, Nephritis, Glycosuria, Diabetes, Gastro-intestinal Complaints, and General Metabolic Disturbances will be held, commencing on February 6th, 1922, and lasting for six weeks.

In addition to the above, the Course will include Demonstrations and Lectures on Neurology, X-rays, and Modern Cardiographic Methods, together with some Bacteriological work. Fee for the Course £15 15s.

The Course is limited to Fifteen Students.

Full particulars to be obtained from the Medical Secretary of the School, St. Thomas's Hospital, S.E. 1.

DIPLOMA IN PUBLIC HEALTH.

The Royal Institute of Public Health.

Patron: HIS MOST EXCELLENT MAJESTY KING GEORGE V.
Principal: Prof. Sir WILLIAM SMITH, M.D., D.Sc., LL.D., F.R.S. Edin.

The Course of Instruction for the Degrees and Diplomas in Public Health, with the necessary Laboratory Work, can commence at any time, and special arrangements are made to suit the convenience of those (Men and Women) holding Appointments, &c.

The Principal will be pleased to interview intending Candidates for the purposes of advice.

Further particulars can be obtained from the Secretary, 37, Russell-square, W.C. 1.

GUY'S HOSPITAL MEDICAL SCHOOL.

FINAL F.R.C.S. COURSE.

A Course of Instruction for the May Examination will begin on WEDNESDAY, FEBRUARY 1ST, and will be conducted as follows:—

Mr. F. J. Steward and Mr. R. P. Rowlands	...	Special Clinical Demonstrations.
Mr. R. Davies-Colley	...	Surgical Pathology.
Mr. L. Bromley ...	...	Operative Surgery.
Professor J. H. Eyre	...	Immunity and Bacteriology.
Professor T. B. Johnston	...	Surgical Anatomy.
Mr. W. H. Ogilvie ...	...	Tutorial Classes & Demonstrations.

Inclusive Fee for the Whole Course, £21.

All wishing to join the Course must lodge their applications on or before Saturday, January 21st, with the Dean, Guy's Hospital Medical School, S.E. 1, from whom full details of the Course may be obtained.

DIPLOMA IN PUBLIC HEALTH.
UNIVERSITY OF CAMBRIDGE.

LECTURES and PRACTICAL INSTRUCTION in the subjects of the Examination will begin 13th January and 19th April, 1922, at the

UNIVERSITY LABORATORIES, DOWNING STREET, CAMBRIDGE.

Hygiene, Chemistry, and Physics—Mr. J. E. Purvis.
Bacteriology and Preventive Medicine—Dr. Graham-Smith.
Special Lectures by Professor Nuttall on Protozoal Diseases.

Practical Sanitary Administration, Hospital Administration, School Hygiene, Sanitary Law, &c.—Dr. Laird, M.O.H. for Cambridge, and Dr. Robinson, M.O.H. for the Cambridgeshire County Council.

Further particulars may be obtained from Mr. J. E. PURVIS, Public Health Chemical Laboratory, Cambridge

University of London, University COLLEGE.

DIPLOMA IN PUBLIC HEALTH.

Professor: HENRY R. KENWOOD, C.M.G., M.B., D.P.H., F.R.S.E., Medical Officer and Public Analyst for the Metropolitan Borough of Stoke Newington: Medical Officer of Health and Education, Bedfordshire County Council, &c.

Lecturer on Diseases Common to Man and the Lower Animals: A. G. R. FOULERTON, F.R.C.S., D.P.H.

Lecturer in Bacteriology: F. H. TEALE, M.D., B.Sc., F.R.C.P

Assistant: M. E. DELAFIELD, M.B., L.R.C.P., D.P.H.

Assistant Lecturer and Demonstrator (Bacteriology): D. EMBLETON, M.A., M.B., L.R.C.P.

Demonstrator: F. T. MARCHANT, M.R.San.I.

The Laboratories are open daily from 10 to 5 (Saturdays 10 to 1) for Practical Instruction and Research.

The next Course begins on Tuesday, January 10th, 1922, at 2 P.M.

Demonstrations of Sanitary Appliances and Excursions to places of Public Health interest are undertaken.

Arrangements are made to suit the convenience of those engaged in practice.

A SPECIAL COURSE OF BACTERIOLOGICAL INSTRUCTION is arranged for D.P.H. Candidates.

Particulars may be obtained on application to—
WALTER W. SETON, M.A., D.Lit., Secretary.
University College, London (Gower-street, W.C. 1).

National Hospital for the Paralysed AND EPILEPTIC.

A POST-GRADUATE COURSE of LECTURES and DEMONSTRATIONS in NEUROLOGY will commence at the HOSPITAL on JANUARY 16th, 1922. The fee for the Course, which will last for ten weeks, will be £8 8s. There will also be a COURSE of Six LECTURES and DEMONSTRATIONS on NEUROLOGICAL OPHTHALMOLOGY, for which the fee will be £4 4s. if taken alone, or £2 2s. if taken with the Post-Graduate Course. The Special Course will be held only if there be sufficient entries. Particulars of these Courses and Syllabus can be obtained on application to the Hospital.

C. M. HINDS HOWELL, Dean of the Medical School.

Liverpool School of Tropical Medicine.

Courses of Instruction (lasting three months) for the Diploma, and also in Veterinary Parasitology, commence about September 15th and January 7th. Prospectus from the Dean, School of Tropical Medicine, University of Liverpool.

UNIVERSITY EXAMINATION POSTAL INSTITUTION.

Postal or Oral Preparation for all Medical Examinations

SOME SUCCESSES

M.D.(Lond.), 1901-21 (6 Gold Medallists 1913-20). **251**
M.S.(Lond.), 1902-21 (including 3 Gold Medallists). **18**
M.B., B.S.(Lond.), *Final* 1906-21 (completed exam.) **131**
F.R.C.S.(Eng.), 1906-21, Primary **85**; Final **64**
(Primary 20, Final 19 successful in 1920.)
F.R.C.S.(Edin.), 1918-21 ..... **20**
M R.C.P. (Lond.), 1914-21 ..... **48**
(15 successful in 1920.)
D.P.H. (various), 1906-21 ..... **193**
M.R.C.S.,L.R.C.P. (*Final*), 1910-21 (complete exam.) **148**
M.D. (Durham) (Practitioners), 1906-21. **29**
M.D. (various), by Thesis. Many Successes.

Preparation also for M.B. (Cantab., etc.), Diplomas in Psychological Medicine and Ophthalmology, L.M.S.S.A., Triple Qualification, etc.; also Preliminary (Arts or Science).

ORAL CLASSES

in Medicine, Pathology, Surgery, Midwifery, and Gynæcology always in progress.

Those who join late are charged a proportionate part of the fee.

For Prospectus (24 pp.) and full particulars about any examination, List of Tutors, List of Successes, &c., apply to the Principal, Mr. E. S. WEYMOUTH M.A., 17, Red Lion Square, London, W.C. 1
(Telephone: Central 6313.)

R·M·S·P : P·S·N·C

TO·SOUTH AMERICA

THE ROYAL MAIL STEAM PACKET COMPANY
18, MOORGATE STREET LONDON, E.C.2
THE PACIFIC STEAM NAVIGATION COMPANY
GOREE, WATER STREET, LIVERPOOL

Anstey Physical Training College,
ERDINGTON, BIRMINGHAM,
offers well-educated Women complete Teacher's Training in SWEDISH EDUCATIONAL GYMNASTICS, MEDICAL GYMNASTICS AND MASSAGE, DANCING, GAMES, SWIMMING, ANATOMY, HYGIENE, &c. Three Years' Course. GOOD APPOINTMENTS AFTER TRAINING. Prospectus on application.

St. John's and St. Thomas's House.—Trained & experienced MEDICAL, SURGICAL, MATERNITY NURSES and MASSEUSES can be obtained by application, personally or by letter, to the Sister in Charge, 12, Queen's-sq., W.C.1 (Tel. No. 7161 Museum), or to Matron, St. Thomas's Hospital (Tel. 4191 Hop). Tel. address: "Private Nurses, London"

ST. LUKE'S HOSPITAL.
Established 1751.

PRIVATE NURSING STAFF DEPARTMENT.

TRAINED NURSES for Mental and Nervous Cases can be had immediately. Apply to LADY SUPERINTENDENT, 19, Nottingham Place, London, W.1. Telephone: Mayfair 5420.

NORTHERN BRANCH.—Apply, LADY SUPERINTENDENT, 57, Clarendon Road, Leeds. Telephone: Leeds 26165.

MALE NURSES LTD.
Telephone— 5969 MAYFAIR (TEMPERANCE) ASSOCIATION 24, NOTTINGHAM ST., W. 1. Telegrams— "GENTLEST, LONDON."

FEMALE NURSES
Telephone— 5969 MAYFAIR (TEMPERANCE) ASSOCIATION 24, NOTTINGHAM ST., W. 1. Telegrams— "GENTLEST LONDON."

CERTIFICATED HOSPITAL NURSES (Male & Female) AVAILABLE DAY & NIGHT FOR MEDICAL, SURGICAL, MENTAL, AND ALL CASES.
TERMS from £3 3s. ALL NURSES ARE FULLY INSURED AGAINST ACCIDENT. M. J. QUINLAN, Secretary

MENTAL NURSES ASSOCIATION, Ltd. (MALE and FEMALE)
8, Hinde Street, Manchester Sq., London, W.1.
SUPERIOR CERTIFICATED MENTAL NURSES (MALE AND FEMALE) SUPPLIED AT A MOMENT'S NOTICE, DAY OR NIGHT.
LADIES' TRAVELLING COMPANIONS. For all MENTAL and NERVE Cases. *All Nurses fully insured against Accident.*
Telegrams: "Isolation, London." Terms: £2 4 6 to £3 3 0 Apply:—SECRETARY. *Telephone:* Mayfair 2287

MALE NURSES TEMPERANCE CO-OPERATION, LTD.
TRAINED MALE NURSES AND VALET ATTENDANTS for MENTAL MEDICAL, TRAVELLING AND ALL CASES.
8, HINDE ST., MANCHESTER SQ., W. 1.
MANCHESTER—237, BRUNSWICK STREET (*Facing Owens College*)
EDINBURGH—7, TORPHICHEN STREET
Terms from £3 13 6 to £4 4 0
ALL NURSES ARE FULLY INSURED AGAINST ACCIDENT

Telephones: London: 3297 MAYFAIR. Manchester: 4699 CENTRAL. Edinburgh: 2715 CENTRAL.
Telegrams: ASSUAGED, LONDON. ASSUAGED, MANCHESTER. ASSUAGED, EDINBURGH.
Please address all communications W. WALSHE, Secretary

LONDON: 43, NEW CAVENDISH STREET. MANCHESTER: 176, OXFORD ROAD.
GLASGOW: 28, WINDSOR TERRACE. DUBLIN: 47, MESPIL ROAD.

NURSES
MALE & FEMALE
CAVENDISH TEMPERANCE MALE NURSES' CORPORATION, Ltd.

TELEGRAMS:
Tactear, London. Surgical, Glasgow.
Tactear, Manchester. Tactear, Dublin.

TELEPHONES:
London, 1277 Mayfair. Glasgow, 477 Central.
Manchester, 5213 Central. Dublin, 531 Ballsbridge.

Superior trained Nurses for Medical, Surgical, Mental, Dipsomania, Travelling and all cases. Nurses reside on the premises, and are always ready for urgent calls Day or Night. Skilled Masseuses, Masseurs, and good Valet attendants supplied. Terms from £3 3s. Apply to the Secretary or Lady Supt.

Telephone: LANGHAM 2728
Telegrams: "ASSISTIAMO, LONDON"

MALE NURSES' ASSOCIATION

29, YORK ST., BAKER ST., LONDON, W.1.
Established 20 years.

Permanent Staff of Resident Male Nurses.
We supply fully-trained Male Nurses for all cases.
Thoroughly experienced men with special training for mental work.
Masseurs supplied for town or country.

W. J. HICKS, *Secretary*

Telephone: LANGHAM 2728
Telegrams: "ASSISTIAMO, LONDON"

For MEDICAL, SURGICAL, and

MENTAL NURSES

Male or Female.

Our nurses are chosen carefully for their personal character and their suitability for private work. They reside on the premises, and are available for urgent cases Day or Night.
(Mrs.) MILLICENT HICKS, *Superintendent.*
W. J. HICKS, *Secretary*

THE NURSES' ASSOCIATION

In conjunction with the MALE NURSES ASSN.
29, YORK ST., BAKER ST., LONDON, W.1

THE LONDON TEMPERANCE

MALE NURSES & NURSES CO-OPERATION

Telephone— Mayfair 2302. 18, ADAM STREET, PORTMAN SQUARE, LONDON, W.1. *Telegrams* Nurslontem, London.

Superior Trained Male Nurses available for all cases day or night.

Supplies Fully Trained Hospital Nurses; also MENTAL Nurses.

NURSES FULLY INSURED AGAINST ACCIDENT.

Apply, SECRETARY.

CO-OPERATION OF TEMPERANCE

MALE & FEMALE NURSES

60 WEYMOUTH STREET, PORTLAND PLACE, LONDON, W.1.
Reliable and Experienced Nurses for all Cases at all Hours.
Special Staff for Mental "Borderline," Neurasthenia, and Nerve Cases.
Telephone: MAYFAIR 2253. Telegrams: "NURSINGDOM, LONDON."
Terms £2 : 2 : 0 to £3 : 3 : 0 per week. Apply M. SULLIVAN, Secretary.

THE ASSOCIATION OF CERTIFICATED BLIND MASSEURS.

224-6-8, Great Portland St., London, W.1. *'Phone: Langham, 2542.*

First President of the Association:
The late SIR ARTHUR PEARSON, BART., G.B.E.

The services of fully qualified Blind Masseurs and Masseuses (trained at St. Dunstan's and the National Institute for the Blind) can be obtained on application to the Secretary.

PROVIDE FOR OLD AGE.

Old age and infirmity with their disability come all too soon. Provide capital for your old age by an Endowment Assurance.

PRUDENTIAL ASSURANCE CO., LTD.,

142, HOLBORN BARS, E.C. 1.

DUFF HOUSE, BANFF, SCOTLAND.

TREATMENT OF DISORDERS OF THE STOMACH AND INTESTINES, INCLUDING TROPICAL DISEASES; DIABETES

and other complaints which need skilled chemical, bacteriological, and protozoological investigation and dietetic treatment.

The House is fitted with Laboratories, X Ray Installation, Medical Baths, Central Heating, and Lifts.

The climate is mild, and the rainfall the lowest in Scotland.

Apply, THE SECRETARY, Duff House, Banff.

BARNSLEY HALL,

BROMSGROVE.

MENTAL PRIVATE PATIENTS of both sexes are received in connexion with the Worcestershire Mental Hospital.
Extensive private grounds in the beautiful Lickey district.
For further particulars and necessary forms apply to the Medical Superintendent. Terms 35s. weekly.

Home

FOR THE CARE AND TREATMENT OF

Mentally Afflicted Ladies

OTTO HOUSE,

47, North End Road, West Kensington, W. 14.

The Home stands in large grounds close to West Kensington Station.

For Terms, apply to Miss BRODIE, Resident Lady Superintendent.

Telephone: Hammersmith 1004.

Mrs. SUTHERLAND (Licensed Proprietress).

EARLY TREATMENT OF NERVOUS DISORDERS AND BORDERLAND CASES
CONDUCTED BY THE SOCIETY OF FRIENDS.

MILLFIELD, near YORK, FOR GENTLEMEN.

THROXENBY HALL, near SCARBOROUGH
FOR LADIES. (*Tele.: 282.*)

Apply in either case to the MATRON or to the Secretary, A. FRED. BURGESS, 107, Heslington Road, York. (Telephone 112.)

No Certifiable Persons can be received.

CHEADLE ROYAL,
CHEADLE, CHESHIRE.

This Hospital for **MENTAL DISEASES** with its seaside branch Glan-y-Don, Colwyn Bay, is for the treatment of PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES. Voluntary Boarders received.

For terms, &c., apply to the Superintendent, J. SUTCLIFFE, M.R.C.S., or he may be seen at 72, Bridge-street, Manchester, on Tuesdays and Fridays from 2 to 3. Telephone: No. 208 Cheadle Hulme.

HEIGHAM HALL, NORWICH
Telephone ***For Upper and Middle Classes*** 80 Norwich

Private Home for Cure of Ladies and Gentlemen suffering from **Nervous** and **Mental Diseases.** Extensive pleasure grounds. **Private Suites of Rooms** with special Attendants available. **Boarders received** without certificates.

Terms from 4 to 25 guineas weekly. Patients sent for.

Apply, Dr. G. STEVENS POPE or Mrs. POPE, Resident Licensees.

MALLING PLACE, KENT
For LADIES and GENTLEMEN of Unsound Mind.

Terms Moderate. Apply to Resident Medical Superintendent.
Telegrams: ADAM, WEST MALLING. Telephone: No. 2 MALLING.

BISHOPSTONE HOUSE, BEDFORD
Telephone 708.

Private Home for Mentally Afflicted Ladies; ten only received. Terms 6 gns. weekly.

Apply, Medical Officer, or Mrs. Peele.

THE COPPICE, NOTTINGHAM.
HOSPITAL FOR MENTAL DISEASES.

President: The Right Hon. the EARL MANVERS.

This Institution is exclusively for the reception of a limited number of PRIVATE PATIENTS of both sexes, of the UPPER and MIDDLE CLASSES, at moderate rates of payment. It is beautifully situated in its own grounds, on an eminence a short distance from Nottingham, and commands an extensive view of the surrounding country; and from its singularly healthy position and comfortable arrangements affords every facility for the relief and cure of those mentally afflicted. For terms, &c., apply to the Medical Superintendent.

CLARENCE LODGE
CLARENCE ROAD, CLAPHAM PARK

A limited number of Ladies suffering from MENTAL & NERVOUS DISORDERS are received for treatment under a Specialist.

The house stands in large grounds.

For further particulars see Illustrated prospectus from the Proprietress, Mrs. THWAITES. Telephone: Brixton 494.

For the TREATMENT OF LADIES
Suffering from NERVOUS AND MENTAL AFFECTIONS.
The Moat House, Tamworth, Staffs.

Telephone: 108 Tamworth.

The House stands in grounds of 10 acres, and is within five minutes' drive of L. & N.W. and M.R. Stations.

For terms, &c., apply to Licensees, CLAUDE HOLLINS, or Mrs. S. A. MICHAUX (Resident); or to the Medical Attendant, Dr. LOWSON.

BARNWOOD HOUSE
HOSPITAL FOR MENTAL DISEASES,
BARNWOOD, near GLOUCESTER.

Telephone: No. 7 Barnwood.

Exclusively for PRIVATE PATIENTS of the UPPER AND MIDDLE CLASSES.

This institution is devoted to the Care and Treatment of persons of both sexes at moderate rates of payment.

Voluntary boarders not under certificates are admitted.

Under special circumstances the rates of payment may be reduced by the Committee.

The MANOR HOUSE for Ladies only, which is entirely separate from the Hospital and standing in its own grounds, will be utilised exclusively for voluntary patients.

For further information apply to ARTHUR TOWNSEND, M.D., the Medical Superintendent.

PORTSMOUTH BOROUGH MENTAL HOSPITAL.

Accommodation is provided for the reception of PRIVATE PATIENTS of both sexes in three detached Villas, which are healthily and pleasantly situated in extensive grounds, with sea views.

Charges from 3 guineas weekly, including all necessaries, except clothing. Apply to the Medical Superintendent.

STRETTON HOUSE,
Church-Stretton, Shropshire.

A Private HOME for the treatment of Gentlemen suffering from Mental Diseases. Bracing hill country. See "Medical Directory," p. 2119. Apply to Medical Supt. Tel.: 10 P.O. Church-Stretton.

THE FLOWER HOUSE,
BECKENHAM LANE, S.E. 6. **'Phone: Bromley 57.**

(For over 20 years under the direction of the late Dr. CHARLES MERCIER).

A PRIVATE HOME of the highest class for GENTLEMEN suffering from Mental and Nervous Disorders.

Voluntary Patients received. A family Mansion with 25 acres of beautiful grounds.

For terms and further particulars, apply ALFRED E. PRICE, M.D., M.S., Medical Superintendent.

SPRINGFIELD HOUSE
(Telephone No. 17) **Near BEDFORD**

A PRIVATE HOME for MENTAL CASES.

Ordinary terms Five Guineas per week (including Separate Bedrooms for all suitable cases without extra charge).

For forms of admission, &c., apply to the Drs. BOWER, as above, or at 5, Duchess-street, Portland-place, W. 1, on Tuesdays from 4 to 5.

ASHWOOD HOUSE
KINGSWINFORD, STAFFORDSHIRE.

An old established home-like Institution for the treatment of MENTAL AFFECTIONS in BOTH SEXES.

Full particulars as to reception terms, &c., may be obtained from the Resident Medical Officer.

CITY OF LONDON MENTAL HOSPITAL.
DARTFORD, KENT.

Under the Management of a Committee of the Corporation of the City of London.

PRIVATE PATIENTS are received at a weekly charge of **Two Guineas** and upwards.

Apply to the Medical Superintendent.

LITTLETON HALL, BRENTWOOD, ESSEX

(18 MILES FROM LONDON.)

400 feet above sea

HOME for few LADIES Mentally Afflicted. Large grounds. Liverpool-st. 26 min. Stations Brentwood, Shenfield, one mile. Boarders received. Apply Dr. Haynes, Telephone and Telegrams: Haynes Brentwood 45.

ST. ANDREW'S HOSPITAL
FOR MENTAL DISEASES,
NORTHAMPTON.

President—The Right Hon. the EARL SPENCER, K.G.

This Registered Hospital receives for treatment PRIVATE PATIENTS of the UPPER and MIDDLE CLASSES of both Sexes. The Hospital, its branches (including a Seaside Home at Llanfairfechan, North Wales), and its numerous Villas are surrounded by nearly a thousand acres of Park and Farm.

Voluntary Boarders without certificates received.

For particulars, apply to DANIEL F. RAMBAUT, M.A., M.D., the Medical Superintendent. TELEPHONE No. 56.

HAYDOCK LODGE, Newton-le-Willows, LANCASHIRE.

A PRIVATE MENTAL HOSPITAL FOR THE CARE AND TREATMENT OF MENTAL AND NERVOUS CASES OF BOTH SEXES, EITHER VOLUNTARY OR UNDER CERTIFICATES, preference being given to Recoverable Cases.

Terms from **£2 2s.** per week upwards. Private Apartments on special terms.

Situated mid-way between Manchester and Liverpool. Two miles from Newton-le-Willows Station on the L. & N.W. Rly., and close to Ashton-in-Makerfield Station on the G.C. Rly. in direct communication with Manchester.

CONSULTING ROOMS (Dr. Street), 47, Rodney Street, Liverpool, from 2 to 4 P.M., or by appointment. Telephone: 2458 Royal Liverpool. Manchester (Dr. Mould), Winter's Buildings, St. Ann Street, on Tuesdays and Thursdays, from 12 to 1.30 P.M., or by appointment.

VISITING AND CONSULTING PHYSICIANS—Sir JAMES BARR, LL.D., M.D., F.R.C.P., 72, Rodney Street, Liverpool; G. E. MOULD, Physician for Mental Diseases to the Sheffield Royal Hospital, The Grange, Rotherham.

For further particulars and forms of admission apply Resident Medical Proprietor, Haydock Lodge, Newton-le-Willows, Lancs.

Telegraphic Address: "STREET, Ashton-in-Makerfield." Telephone: 11 Ashton-in-Makerfield.

CAMBERWELL HOUSE, 33, PECKHAM RD., LONDON, S.E. 5.

Telegrams: "PSYCHOLIA, LONDON." Telephone: New Cross 1057.

For the Treatment of Mental Disorders.

Completely detached Villas for Mild Cases. Voluntary Boarders received. 20 acres of grounds including extensive allotments on which gardening is encouraged. Tennis, croquet, squash rackets, and all indoor amusements. Daily Services in Chapel. Senior Physician: FRANCIS H. EDWARDS, M.D., M.R.C.P. An illustrated Prospectus, giving full particulars and terms, may be obtained on application to the Secretary.

HOVE VILLA, BRIGHTON.

A Convalescent Branch of the above, to which also suitable patients may be sent on holiday.

NORTHWOODS HOUSE

WINTERBOURNE, near BRISTOL.

FOR PRIVATE TREATMENT OF MENTAL DISEASES.

Situated in a large park in a healthy and picturesque locality, easily accessible by rail viâ Bristol, Winterbourne, Patchway, or Yate Stations. Uncertified Boarders received. For further information see Medical Directory, page 2149. Terms moderate.

Apply to Dr. J. D. Thomas, Resident Physician and Licensee, for full particulars.

PECKHAM HOUSE

Established 1826

112, PECKHAM ROAD, LONDON, S.E.

Telegrams: "Alleviated, London." **Telephone: New Cross 576.**

An Institution licensed for the CARE and TREATMENT of the MENTALLY AFFLICTED of Both Sexes. Conveniently situated. Electric trams and omnibuses from the Bridges and West-End pass the House. Private houses with electric light for suitable cases adjoining the Institution. Holiday parties sent to the Seaside branch at Worthing during the Summer months. Moderate terms.—Apply to Medical Superintendent for further particulars.

LAVERSTOCK HOUSE,

SALISBURY.

A Private Home for Mental and Nervous Disorders.

For particulars apply to MEDICAL SUPERINTENDENT.

Telegrams: BENSON, LAVERSTOCK. **Telephone: 12 SALISBURY**

NEW SAUGHTON HALL

THE ONLY PRIVATE HOSPITAL for the TREATMENT of MENTAL CASES in SCOTLAND

POLTON, MIDLOTHIAN.

NEW SAUGHTON HALL, which takes the place of Saughton Hall, established in 1798, is situated seven miles south of Edinburgh, in the beautiful neighbourhood of Hawthornden and Rosslyn, and is surrounded by picturesque and well-timbered pleasure grounds extending to 125 acres. There is also a SEASIDE HOUSE at GULLANE, EAST LOTHIAN.

Railway Stations—Polton, five minutes; and Loanhead, ten minutes' walk from the Institution—reached in half-an-hour from the Waverley Station, Edinburgh. Telephone—4 Loanhead.

Forms of admission for voluntary or certified cases, full instructions, &c., can be obtained on application to the Resident Medical Superintendent, S. RUTHERFORD MACPHAIL, M.D.Edin. Inclusive terms from £156 to £500 per annum, according to requirements.

NORTHUMBERLAND HOUSE,

GREEN LANES, FINSBURY PARK, N.

Telegrams: "SUBSIDIARY, LONDON." ***(Established 1814.)*** Telephone: No. 888, North.

A PRIVATE HOME for the Treatment of Ladies and Gentlemen suffering from Nervous and Mental Affections. Four miles from Charing Cross; easy of access from all parts.

Six acres of ground, highly situated, facing Finsbury Park.

Voluntary Boarders received without certificate. Seaside Branch at Worthing.

For particulars, apply to the RESIDENT PHYSICIAN.

THE ROYAL EARLSWOOD INSTITUTION FOR MENTAL DEFECTIVES

(Formerly the EARLSWOOD ASYLUM)

REDHILL, SURREY.

E. C. P. HULL, Esq., J.P., Treasurer

FOR THOSE REQUIRING CONTROL with EXPERT SUPERVISION and needing SPECIAL TRAINING in useful occupations. **SCHOOLS, FARMING,** and various **TRADE WORKSHOPS.**

SELECTED CASES admitted on reduced inclusive fees. **THOSE UNABLE TO PAY** admitted by votes of Subscribers, with part-payment towards cost.

RECREATIONS: ALL outdoor games, EXCELLENT BAND by Male Staff, for Concerts, Dancing, &c.

Apply: THE MEDICAL SUPERINTENDENT, Earlswood, Redhill, Surrey, or to the Secretary, Mr. HARRY HOWARD, 14-16, Ludgate Hill, E.C.4.
Telephone: Redhill 344 Telephone: City 5297.

INEBRIETY.

[Telephone: 16 Rickmansworth

DALRYMPLE HOUSE, RICKMANSWORTH, HERTS.

For the treatment of Gentlemen under the Act and privately. Established 1883 by an association of prominent medical men and others for the study of inebriety; profits, if any, are expended on the institution. Large secluded grounds on the banks of the river Colne. All kinds of out-door and in-door recreations and pursuits.—For particulars apply to F. S. D. HOGG, M.R.C.S., &c., Resident Medical Superintendent

YARROW CONVALESCENT HOME, BROADSTAIRS.

FOR CHILDREN OF WELL-EDUCATED PEOPLE OF VERY LIMITED MEANS.

100 Beds. Boys, ages 4 to 12. Girls, ages 4 to 14. Charge, 21s. per week for each Child.

This fee is subject to addition or deduction according to Parents' means.

The usual stay is 4 weeks, but some wards are reserved for serious cases requiring special treatment, and for these a lengthened stay may, under some circumstances, be granted, and the age limit raised to 14 for Boys and 16 for Girls.

The Home faces the sea, and is open all the year, being as well adapted for winter as for summer residence.

Particulars can be obtained from the SECRETARY, 116, VICTORIA ST., WESTMINSTER, LONDON, S.W.1.

THE DEESIDE SANATORIA IN SCOTLAND

FOR THE OPEN-AIR TREATMENT OF

PULMONARY TUBERCULOSIS and ALLIED DISEASES

At BANCHORY and MURTLE.

Medical Director - - DAVID LAWSON, M.A., M.D., F.R.S.E.

These Sanatoria are situated amidst **Ideal Surroundings in Middle Deeside,** the reputation of whose **Climate** in the treatment of Lung Diseases is well established.

Both Institutions are well equipped with **Research Laboratory, Throat Room, Dental facilities,** and powerful **X-Ray Plant. Full Day and Night Nursing Staffs** are employed.

Special Treatment by artificial **Pneumothorax** (with X-ray Control), the various **Tuberculins,** and Autogenous **Vaccines,** &c., are employed in suitable cases without extra charge.

NORDRACH-ON-DEE

At BANCHORY, near BALMORAL.

Senior Physician - - IAN STRUTHERS STEWART, M.D. Ed., F.R.S.E

Assistant Physicians - W. THURBURN SCOTT, M.B. Cantab
J. C. LORRAINE, M.B. Ed., F.R.C.S.E.

Apply Secretary, Sanatorium, Banchory, Scotland.

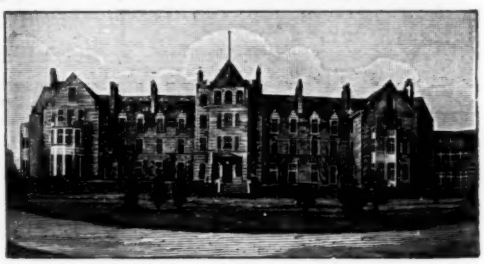
TOR-NA-DEE SANATORIUM

AT MURTLE.

Senior Physician - - - J. M. JOHNSTON, M.B., Ch.B. Ed., D.P.H.
Assistant Physician - - JAMES LAWSON, M.D. Ed., M.R.C.P.E.
Junior Physician - - - A. C. FOWLER, M.B., Ch.B. Aberd.

Officers recommended by the Scottish Branch of the British Red Cross Society obtain priority in regard to admission. This Branch of the Society is prepared to contribute £1 11s. 6d. per week towards paying the fees of Officers whose admission meets with their approval.

Apply Secretary, Sanatorium, Murtle, Scotland.



KINGUSSIE, N.B.

THE GRAMPIAN SANATORIUM.

Situated in the Upper Speyside district of Inverness-shire. One of the highest inhabited districts in Britain—"The Switzerland of the British Isles." Bracing and dry mountain climate, well sheltered. Sanatorium specially built for the Open-Air Treatment of Tuberculosis. Open in 1901. Elevation nearly 900 ft. above sea-level. Electric light throughout buildings and in rest shelters. All forms of treatment available.

Terms: 5½ and 6 guineas weekly. *For particulars apply:*

FELIX SAVY, M.B., Ch.B., Physician-Supt.
(late Tuberculosis Specialist, Aldershot Command).

PENDYFFRYN HALL SANATORIUM

(NORDRACH-IN-WALES.)

FOR THE OPEN-AIR AND INOCULATION TREATMENT OF ALL FORMS OF TUBERCULOSIS.
TREATMENT AVAILABLE BY ARTIFICIAL PNEUMOTHORAX.

One of the first Sanatoria opened in the United Kingdom to carry out the treatment as practised at Nordrach. Carefully graduated walks rise through pine, gorse, and heather to a height of over 1000 feet above sea level, commanding extensive views of both sea and mountains. Sheltered from E. and N.E. winds. Climate mild and bracing. Small rainfall. Large average of sunshine. There are over five miles of walks in the private grounds. Rooms heated by hot-water radiators and lit by electric light.

Sister and full Nursing Staff. Trained Nurse on duty all night. Telegrams: Pendyffryn; and Telephone: 20 Penmaenmawr.

Resident Medical Officers: R. ARDRA FEGAN, M.R.C.S., L.R.C.P., L.M.S.S.A.; F. A. LUCAS HAMMOND, M.D., M.R.C.P., D.P.H.

For particulars apply to the Secretary, Pendyffryn Hall, Penmaenmawr, N. Wales.

MENDIP HILLS SANATORIUM

FOR THE OPEN-AIR TREATMENT

Old-established, beautifully situated, 300 acres of Sanatorium grounds. Pinewoods and sheltered avenues. Altitude 850 feet. Porous subsoil. Separate chalets, with verandahs, hot-water radiators, and electric light.

Special Features—Breathing and Graduated Exercises, and continuous Inhalation. Individual attention.

Resident Physicians—Dr. C. MUTHU and Dr. R. C. MACFIE.

For particulars apply SECRETARY, Hillgrove, Wells, Somerset.

DROITWICH BRINE BATHS WARNING.

The Public are warned that the full benefits of the treatment for Rheumatism and kindred complaints **CAN ONLY BE OBTAINED IN THE NATURAL BRINE BATHS AT DROITWICH, FOR WHICH THERE IS NO SUBSTITUTE.** LOVELY HOLIDAY DISTRICT. GOOD HOTELS, &c. Illustrated Booklet Post-free from Baths Manager, J. H. HOLLYER, 48, Spa Enquiry Offices, Droitwich (Worcs.) **SPECIAL FACILITIES TO MEDICAL MEN.**

SMEDLEY'S HYDRO.

MATLOCK. Established 1853.

Physicians: G. C. R. Harbinson, M.B., B.Ch.
R. MacLelland, M.D., C.M. (Edin.)

Prospectus and full information on application to Managing Director.

The Pines AROSA Switzerland

Small English Pension run on Sanatorium lines.

Apply Mrs. DONNER (late of Villa Gentiana).

Reference by permission to Dr. E. C. MORLAND.

BEN RHYDDING HYDRO.

On the YORKSHIRE MOORS, near ILKLEY.

IDEAL for NEURASTHENIA, CONVALESCENCE, and RHEUMATIC AFFECTIONS.

THE MOST MODERN ELECTRICAL TREATMENT & MASSAGE.

For Terms apply MANAGER. *Resident Physician:* G. COOPER, M.D.

NORTHAMPTONSHIRE SANATORIUM

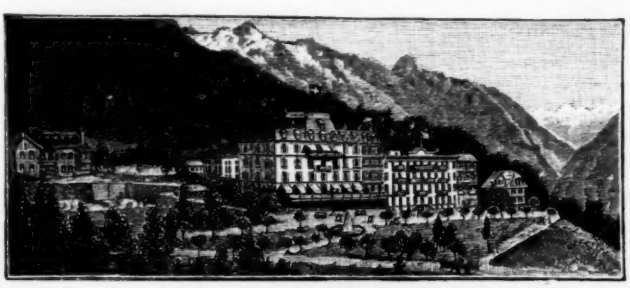
CREATON, near Northampton.

Under the Management of the Committee of the Northampton Branch of the National Association for the Prevention of Tuberculosis.

Exclusively for Early Cases of PULMONARY TUBERCULOSIS, either sex. Private Patients are received at a charge from **2½ guineas** a week.

Telephone: 9 Creaton. Apply to the MEDICAL SUPERINTENDENT.

PALACE SANATORIUM, MONTANA-SUR-SIERRE, SWITZERLAND.



TUBERCULOSIS CURE STATION (All the Year).

THE FINEST IN EUROPE.

5000 feet high.

Accommodation for 100 patients.

Principal Resident Medical Officer:
BERNARD HUDSON, M.D. Cantab., M.R.C.P.,
Late Physician to the Queen Alexandra Sanatorium, Davos Platz.

FULL PARTICULARS FROM THE SECRETARY, 5, ENDSLEIGH GARDENS, LONDON, N.W.1.

EPILEPSY.

Colthurst House School,
Warford, Alderley Edge.
(Under the Management of the Committee of the David Lewis Colony)

Home Life, Medical Care, School Education, most suitable for boys subject to Epilepsy. Terms 42s. weekly.

Further particulars may be obtained from Dr. ALAN MCDOUGALL, The Colony, Warford, Alderley Edge.

EPILEPSY. THE DAVID LEWIS COLONY.

Stands in its own grounds of 180 acres and is situated in a beautiful part of Cheshire, 2½ miles from Alderley Edge Station, and 14 miles from Manchester. Electric light throughout. The Colony system ensures the social life and employment most suitable for those who suffer from Epilepsy. Patients certifiable under the Lunacy or Mental Defectives Acts are NOT ELIGIBLE for admission. Two Resident Physicians. Terms for Middle- and Upper-class Patients, from 42s. a week upwards, according to accommodation and requirements. Private rooms can be provided.

For further information apply to the Director, Dr. ALAN MCDOUGALL, Warford, near Alderley Edge, Cheshire.

Telegraphic Address: "Relief, Old Catton." Telephone: "290 Norwich."

NERVOUS & MENTAL AFFECTIONS.

Ladies only received.

The Grove, Old Catton, Norwich.—**A High-class Home** for the **Curative Treatment** of Nervous Affections. **Voluntary Boarders** are also received without certificates. Nurses supplied to take charge of patients under the care of their own medical attendants. For full particulars apply to the Messrs MCLINTOCK, or to CECIL A. P. OSBURNE, F.R.C.S.E., Med. Supt.

THE GRANGE, Near ROTHERHAM.

A HOUSE licensed for the reception of a limited number of ladies of unsound mind. Both certified and voluntary patients received. This is a large country house with beautiful grounds and park, five miles from Sheffield. Station, Grange Lane, G.C. Railway, Sheffield. Telephone No. 34 Rotherham.

Resident Physician—GILBERT E. MOULD, L.R.C.P., M.R.C.S.
Consulting Physician—CROCHLEY CLAPHAM, M.D., F.R.C.P.E.

THE WARNEFORD, OXFORD,
HOSPITAL FOR MENTAL DISORDERS.

President: The Right Hon. the EARL OF JERSEY.

This Registered Hospital, for the Treatment and Care, at moderate charges, of Mental Patients belonging to the educated classes, stands in a healthy and pleasant situation on Headington Hill, near Oxford. Voluntary boarders are also received for treatment.—For further particulars apply to the Medical Superintendent.

ST. GEORGE'S RETREAT,
BURGESS HILL, SUSSEX.

An old-established Licensed House, under the management of the Augustinian Sisters, for the treatment of Ladies mentally afflicted. Grounds nearly 300 acres. Carriage drives and motoring. Marine Brighton Residence for change. Voluntary Boarders taken.

Resident and Visiting Medical Officers. London 1¼ hours.
For terms, &c., apply to the Superioress.
Telephone: Post Office 90. Telegrams: "Wivelsfield Green."

Shropshire Orthopædic Hospital, Oswestry (Station: Gobowen, G.W.R.). OPEN-AIR WARDS.

Private Wards, 5 guineas per week, exclusive of surgeon's fees, but inclusive of X rays, splints, plasters, massage and gymnasium.

A limited number of beds are available in the General Wards at 2½ guineas per week, inclusive.

For particulars apply the Superintendent.

Grove House, All Stretton, Church STRETTON, SHROPSHIRE.

A PRIVATE HOME for the Care and Treatment of a limited number of Ladies Mentally Afflicted.

Climate healthy and bracing.

Apply to Dr. McClintock, Proprietor and Resident Medical Superintendent.

Patient requiring Care, Rest Cure, Supervision can be received in Doctor's charming Residence near Hyde Park. Terms from £8 8s.—Write to No 910, THE LANCET Office, 423, Strand, W.C. 2.

Home for Patients with Nervous DISEASES.

There are a few vacancies in a Home near London for Male Patients suffering from Nervous Diseases. The fees are £3 3s. weekly, and the patients are visited by an honorary medical staff.—Write, Box 194, care of F. Aldridge, 26, Paternoster-row, E.C. 4.

Ex-Hospital Sister receives a few PATIENTS in her charming country house in Surrey. Nerve, Medical, and Convalescent Surgical cases, &c. Doctors' references. Terms from £5 5s. a week. Nourishing food and every attention.—The Cedar House, Cobham, Surrey. 'Phone Cobham 159.

Resident Patients, Nervous, Border- line, or Convalescent, received by Medical Woman at Hampstead from 3 guineas weekly.—Address, No. 259, THE LANCET Office, 423, Strand, W.C. 2.

A Resident Patient can be received by Medical Man's widow in a charming country house within fifteen miles of Town. Specially suited for nerve, drug, alcoholic, or other cases.—For further details and terms, apply E., care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Physician can receive Elderly Lady or GENTLEMAN, mild, mental, epileptic, paralysed case into his Private Home. Situated fifty-seven miles from town. Every comfort. Many years established. Highest references. Terms from £3 3s. weekly.—Address, No. 214, THE LANCET Office, 423, Strand, W.C. 2.

An Invalid or slightly Mental or Neurasthenic PATIENT can be received by a fully trained Nurse. Highly recommended by patients and medical men.—Nurse Hopton, St. David's, Rayleigh, Essex.

Royal Naval Medical Service.
SHORT SERVICE SCHEME.

The Admiralty are prepared to accept applications for entry as SURGEON LIEUTENANTS for Short Service in the Royal Navy.

Period of Service ..	Three years, with option to extend for further twelve months.
Pay	26s. 6d. per diem, or £483 12s. 6d. per annum.
Gratuity on Discharge ..	£8 6s. 8d. for each completed month of service, or £100 per annum.
Equipment Allowance ..	£50, payable on joining.
Age of Candidates ..	Not to exceed thirty years.

Surgeon Lieutenants on the Short Service Scheme will be considered for transfer to the Permanent Service under certain conditions after six months' service.

Regulations for entry and Form to be filled up by Candidates will be supplied on application to the Medical Director-General, Admiralty, London, S.W. 1.

The Board of Management of the PUTNEY HOSPITAL invite applications for the post of HON. SURGEON.

Applications to be made to the Hon. Secretary, Putney Hospital, Lower Common, Putney, S.W. 15.

St. Thomas's Hospital Medical School. A Full-time DEMONSTRATOR of ANATOMY is required. Duties to commence as early as possible. Salary £400 per annum to a man with experience. Reasonable facilities for research and for passing higher examinations. Apply to the Professor of Anatomy.

Assistant Medical Officer required at SPRINGFIELD MENTAL HOSPITAL, Wandsworth Common, S.W. 17, with Diploma of Psychological Medicine, or be prepared to obtain same within two years. Age limit thirty-five years. Salary £625 per annum, including war bonus and emoluments valued at £200 per annum. No married quarters provided. The appointment subject to Asylum Officers' Superannuation Act. Applications to be made to the Medical Superintendent.

London Temperance Hospital.— Applications are invited for the post of Male RESIDENT CASUALTY OFFICER, which will be vacant on January 12th. Salary £150 per annum, with residence, board, &c.

There is a large Casualty Department which offers very large scope for Medical and Surgical experience, and also in all Special Departments.

Total attendances last year over 83,000.

Applications to be sent in not later than January 7th, 1922, addressed to the Secretary.

City of London Hospital for Diseases OF THE CHEST, Victoria Park, E. 2.
('Bus, Tram and Train, Cambridge Heath, G.E.R.).

Applications for the post of RESIDENT MEDICAL OFFICER (with copies of three testimonials) are invited to be sent to the undersigned on or before Monday, 16th January, 1922. The appointment will be for one year from 11th February, 1922, with eligibility for re-appointment, and subject to the rules and bye-laws of the Hospital. Salary at the rate of £250 per annum, with board, residence, and laundry provided.

GEORGE WATTS, Secretary.

St. Mark's Hospital for Cancer,

FISTULA and OTHER DISEASES of the RECTUM, City-road, E.C. 1.—X RAY MEDICAL OFFICER required. For particulars, apply to the Secretary.

St. Mark's Hospital for Cancer,

FISTULA and OTHER DISEASES of the RECTUM, City-road, E.C. 1.—Part-time PATHOLOGIST required. For particulars, apply to the Secretary.

Metropolitan Asylums Board.

DENTIST.

Applications are invited for the appointment of Dentist (whole-time). The person appointed must be a registered Dentist, and will be required to visit various institutions of the Board and carry out such Dental treatment as may be required. Materials and instruments are provided by the Board.

The commencing remuneration (including bonus at present Civil Service rates) will be £499 17s. 6d. per annum, rising annually by £50 to £702 17s. 6d., together with travelling expenses and luncheon and tea daily when on duty.

Forms of application may be obtained by sending stamped addressed envelope to the Clerk to the Metropolitan Asylums Board, Embankment, E.C. 4, and must be returned to him not later than 10 A.M. on Thursday, 12th January, 1922.

December, 1921.

The Hospital for Sick Children,

Great Ormond-street, London, W.C. 1.—A CASUALTY OFFICER is required on the 1st February, 1922.

Candidates must be registered Medical Practitioners, and are invited to send in their applications, addressed to the Secretary, before 12 o'clock, on Monday, 2nd January, 1922, accompanied by copies of not more than three testimonials given specially for the purpose.

The appointment is made for one year, but may be held, subject to re-election, for a period of three years.

The appointment is non-resident, and whole time.

Salary £400 per annum with luncheon.

All candidates must appear before the Joint Committees at their meeting on Wednesday, 4th January, 1922, at 5 P.M. precisely.

Forms of application and copies of the rules may be obtained from the Secretary, at the Hospital.

By order of the Committee of Management,

December, 1921. JAMES McKAY, Acting Secretary.

Beckenham Education Committee

require the services of a Part-time OPHTHALMIC SURGEON to examine the eyes and prescribe glasses for School Children suffering from defective eyesight. The Candidate appointed will be required to attend at times to be arranged at the School Clinic. Salary at the rate of three guineas per session of 2½ hours. It is estimated that there will be from twenty to thirty sessions per annum.

Applications, stating age, qualifications, and experience, and accompanied by two testimonials of recent date, should be sent to the Secretary, Education Committee, Beckenham, not later than Wednesday, 11th January, 1922.

December 7th, 1921.

Metropolitan Borough of Fulham.

APPOINTMENT OF MEDICAL OFFICER OF HEALTH.

The Council of the Metropolitan Borough of Fulham invite applications for the appointment of Medical Officer of Health for the Borough, at an inclusive commencing salary of £900 per annum, rising by eight annual increments of £25 to £1100 per annum. Duties to commence on the 17th April, 1922, when the present Medical Officer of Health is due to retire.

Candidates must be registered Medical Practitioners and possess the qualifications required by the Public Health (London) Act, 1891, and the Regulations of the Ministry of Health. Practical experience in the duties of a Medical Officer of Health is desirable.

The officer appointed will be required to devote the whole of his time to the duties of the office, not to engage in private or consulting practice, to attend at the Offices of the Council daily, and otherwise to discharge all the duties of the office in accordance with the Regulations of the Ministry of Health and the Standing Orders of the Council.

He will also be required to waive all claims to superannuation under the Superannuation (Metropolis) Act, 1866, and he must pass satisfactorily the usual medical examination as to fitness, and after appointment he must reside within the Borough or within one mile of the boundary thereof.

The appointment will be subject to the approval of the Ministry of Health, and the person appointed shall agree to give three months' notice previous to resigning the office, or to forfeit such sum as may be agreed upon as liquidated damages.

Applications must be made on forms to be obtained from the undersigned, accompanied by copies of not more than three recent testimonials, which must reach me, endorsed "Medical Officer," not later than Saturday, the 14th day of January, 1922.

Canvassing members of the Council, either directly or indirectly, will be definitely considered a disqualification.

J. PERCY SHUTER, Town Clerk.

Town Hall, Fulham, S.W. 6, 14th December, 1921.

The Miller General Hospital for South

EAST LONDON, Greenwich-road, S.E. 10.—HOUSE PHYSICIAN required (three other Residents), to commence duty about the middle of January. Salary £150 per annum, with board, lodging, and laundry. Applications, stating age, qualifications, and experience, accompanied by copies of not more than three recent testimonials, to be sent to the Secretary.

December 30th, 1921.

St. Marylebone Hospital, Ladbroke-

grove, W. 10.—A THIRD ASSISTANT MEDICAL OFFICER required (by January 5th, if possible). The Hospital has 760 beds, contains a very wide range of clinical material, both acute and chronic, and has a consulting staff of eleven members.

Good off-duty time. Quiet quarters. Garden with grass and hard tennis courts. Salary £300 per annum. Apply, Medical Superintendent. Interview by appointment only. Telephone: Park 4534.

The Royal Liverpool Children's

HOSPITAL, Myrtle-street, Liverpool.—The Council of the above Hospital invite applications for the post of HON. ASSISTANT SURGEON. Candidates with special training in Orthopædic Surgery will receive preferential consideration. Applications to be lodged with the Chairman at the Hospital before 1st Feb., 1922.

Chartham Mental Hospital, near

Canterbury.—Wanted, SECOND ASSISTANT MEDICAL OFFICER, with previous experience. Salary £350 to £400 per annum, with board, lodging, washing, &c., valued at £209 per annum. Applications to be sent to the Medical Superintendent at once.

Leeds Public Dispensary.—Notice is

hereby given that the Special Election Committee will elect an HONORARY SURGEON to the Institution on Thursday, January 19th. Applications to be sent in by Saturday, January 14th, addressed to the Chairman of the Election Committee, Public Dispensary, North-street, Leeds.

Leeds Public Dispensary.—Wanted,

SENIOR RESIDENT MEDICAL OFFICER (Male). Must have held posts of Resident Physician and Resident Surgeon. Salary £250 per annum, with board, residence, and laundry. Separate sitting-room. Applications, with copies of three recent testimonials, to be addressed to the Secretary of the Faculty, Public Dispensary, North-street, Leeds.

Walsall General Hospital. — The

Committee invite applications from Ladies for the post of JUNIOR HOUSE SURGEON and ANÆSTHETIST which will shortly become vacant. Salary £175 per annum, with board, residence, and laundry.

Candidates, who must possess registered qualifications, should forward applications, stating age, qualifications, and experience, together with copies of three recent testimonials, to the undersigned. WALTER FRANCOMBE, Secretary.

The Guest Hospital, Dudley.—Appli-

cations are invited for the post of ASSISTANT RESIDENT MEDICAL OFFICER. Salary at the rate of £150 per annum, including Government grant for V.D. Clinic, with furnished apartments, board, and laundry. The appointment will be tenable for six months, and open to fourth or fifth year students.

Applications, stating age, qualifications, and experience, and accompanied by not more than ten copies of testimonials, to be sent to the Secretary, Guest Hospital, Dudley, not later than the 14th January, 1922.

The Guest Hospital, Dudley.—Appli-

cations are invited for the post of RESIDENT MEDICAL OFFICER. Salary at the rate of £270 per annum, including Government grant for V.D. Clinic, with furnished apartments, board, and laundry. Candidates must be fully qualified and registered.

Applications, stating age, qualifications, and experience, and accompanied by not more than ten copies of testimonials, to be sent to the Secretary, Guest Hospital, Dudley, not later than the 14th January, 1922.

Derbyshire Royal Infirmary, Derby

(General Hospital, 320 beds).

Applications are invited for the following Resident Appointments:—

HOUSE SURGEON.

ASSISTANT HOUSE SURGEON and CASUALTY OFFICER.

The appointments are tenable for six months, with a possibility of extension for a further period of six months. Salary £200 per annum, with apartments, board, &c. Applications, with copies of not more than five testimonials, to be sent to the undersigned not later than 14th January.

WALTER BANKS, Superintendent and Secretary.

26th December, 1921.

Metropolitan Asylums Board.

THE DOWNS SANATORIUM, Sutton, Surrey.

The Metropolitan Asylums Board invite applications for the appointment of JUNIOR ASSISTANT MEDICAL OFFICER (unmarried) in their Tuberculosis Service. The present vacancy is at THE DOWNS SANATORIUM, Sutton, Surrey, which has 292 beds and four Medical Officers and is twelve miles from London. Previous tuberculosis experience is not essential, but preference will be given to candidates under thirty with general hospital experience.

Salary £515 6s. per annum, including bonus.

The candidate appointed will be required to reside in the Institution and to pay for board, lodging, and washing at the rate fixed from time to time by the Board's Finance Committee. At present the rate is £130 per annum.

Applications to be made not later than 10 A.M. on Thursday, 12th January, on forms obtainable from the Clerk, Metropolitan Asylums Board, Embankment, London, E.C. 4, by forwarding stamped addressed foolscap envelope.

20th December, 1921.

Bracebridge Mental Hospital, near Lincoln.

MEDICAL SUPERINTENDENT.

Applications are invited for the post of Medical Superintendent to the above Institution, at a commencing salary of £750 per annum, rising by annual increments of £50 to £900 per annum, with furnished house, coal, gas, light, laundry, and fruit and vegetable produce. For superannuation the emoluments of the Medical Superintendent are valued at £300 per annum.

Applicants must be not more than forty years of age and must be fully qualified, with experience of the duties in a public Mental Hospital.

Applications, accompanied by copies of not more than three recent testimonials, and endorsed "Medical Superintendent," should be delivered to me not later than Wednesday, the 4th January, 1922. Canvassing members of the Committee of Visitors will be regarded as a disqualification.

HAROLD E. PAGE, Clerk to the Committee of Visitors.

5 and 6, Bank-street, Lincoln.

City of Birmingham.

MENTAL HOSPITAL SERVICE,
RUBERY HILL AND HOLLYMOOR MENTAL HOSPITAL.

Vacancy for a JUNIOR ASSISTANT MEDICAL OFFICER.

Candidates must be legally qualified, single, age not exceeding thirty-five years.

The Hospital is approved for the purposes of the examinations for the Diploma of Psychological Medicine and the M.D. (Mental Diseases) of the University of London.

Facilities are provided for Research work.

Salary for the present appointment £400 per annum, with apartments, board, laundry, and attendance, valued pre-war for contribution purposes at £80 per annum.

Pensionable under the Asylum Officers' Superannuation Act of 1909.

Applications, with copies of not more than three recent testimonials, should, not later than January 10th, 1922, be forwarded to: T. C. GRAVES, B.Sc., M.D. Lond., F.R.C.S. Eng.
The Medical Superintendent
Rubery Hill Mental Hospital, Rubery.

County Borough of Bolton.

ASSISTANT MEDICAL OFFICER OF HEALTH AND SCHOOL MEDICAL OFFICER.

The Education Committee invite applications for the appointment of an Assistant Medical Officer of Health and School Medical Officer.

The person appointed will be required to assist the Medical Officer of Health in carrying out the work of the Medical Examination of School Children under the Education (Administrative Provisions) Act, 1907, and also, when not occupied in school work, to assist the Medical Officer of Health in other Public Health work, if required so to do. He must be prepared to devote the whole of his time to the duties of the office and not engage in private practice.

Preference will be given to the applicants who:—

(*a*) Have had some definite experience in School Hygiene;

(*b*) Have enjoyed special opportunities for the Study of Children; and

(*c*) Have a special knowledge of Diseases of the Eye and Ear.

The possession of a Diploma in Public Health will be an additional qualification.

The salary will be £400 per annum, rising by annual increments of £25 to a maximum of £500 per annum, plus bonus (the bonus at present paid is in accordance with the Civil Service War Bonus, Award 102).

Applications, endorsed "Assistant School Medical Officer," stating age, qualifications, and previous experience, and accompanied by copies of not more than three recent testimonials, must be received by me not later than Wednesday, 11th January, 1922.

Canvassing, either directly or indirectly, will be a disqualification.

Dated this 13th day of December, 1921.

FRED. WILKINSON, Director of Education.

Education Offices, Nelson-square, Bolton.

Gloucester County Mental Hospital.

JUNIOR A.M.O. wanted. Single, Male, British. Salary £350 per annum, with board, apartments, and laundry. Subject to the provisions of the Asylum Officers' Superannuation Act, 1909. Apply, stating age and qualifications, with copies of three recent testimonials, to the Medical Superintendent.

The Royal Infirmary, Sheffield

(363 Beds.)

The Weekly Board of Management invite applications for the posts of CASUALTY OFFICER, and Ear, Nose, and Throat HOUSE SURGEON.

The salary attached to these appointments is £150 per annum, with board and residence.

Applications, together with copies of recent testimonials, should be addressed to JNO. W. BARNES, Secretary.

Board Room, 19th December, 1921.

The Bury Infirmary.—Wanted,

immediately, a JUNIOR HOUSE SURGEON (Male), who must have both Medical and Surgical qualifications. Salary £150 per annum, with board, residence, and washing.

Among other duties the person appointed will have charge of the Children's Ward, the Ophthalmic department, Casualty and Out-patient's department, and the administration of Anæsthetics.

Applications, stating age and nationality, with testimonials, to be sent at once to the Honorary Secretary, Infirmary, Bury, Lancs.

County Hospital, Lincoln.—Wanted,

1st January, 1922, a JUNIOR HOUSE SURGEON (Male). Salary at the rate of £150 per annum, rising to £200 per annum at the completion of six months' approved service. Board, residence, and washing will be provided.

Candidates for the appointment must be duly registered under the Medical Acts.

Applications, stating age and other particulars, with copies of not more than three recent testimonials, should be addressed to the undersigned, from whom any further particulars may be obtained. ARTHUR MOORE, Secretary-Superintendent.

Lincoln, Dec. 20th, 1921.

The General Hospital, Birmingham.

Applications are invited for the following Resident Appointments:—RESIDENT MEDICAL OFFICER. Vacant December 19th. Candidates must be Graduates of a University in the United Kingdom. Salary £155 per annum. The appointment will be made at 12 noon on Friday, January 6th, 1922, when candidates will be expected to attend.

HOUSE PHYSICIAN. Vacant January 15th, 1922.

HOUSE SURGEON to Special Departments (Skin and Venereal). Vacant now. Further particulars on application.

Candidates, who must be fully qualified and registered, should send in their applications to the undersigned on or before January 2nd, 1922, together with certificates of registration.

A. H. LEANEY, House Governor.

Ancoats Hospital, Manchester.—The

RESIDENT SURGICAL OFFICERSHIP (Male) of this Hospital will become vacant on 1st February, 1922. Salary £250, with board, lodging, &c. Candidates must be fully qualified, and those with a record of previous resident appointments will be preferred.

A vacancy for a HOUSE SURGEON (Male) will also occur on the 10th February, 1922. Candidates must be fully qualified. Salary £150, with board, lodging, &c.

Applications, with testimonials, to be forwarded to the undersigned by Monday, 16th January, 1922.

HERBERT J. DAFFORNE, Secretary.

University of Birmingham.

FACULTY OF MEDICINE.
PROFESSORSHIP OF ANATOMY.

The Council of the University invites applications for the Chair of Anatomy, vacant by the death of Professor Peter Thompson.

The stipend offered is £1000 a year.

Applications (12 copies) may be accompanied by testimonials, references, or other credentials, and should be received by the undersigned on or before the 28th February, 1922.

Further particulars may be obtained from
GEO. H. MORLEY, Secretary.

The University, Birmingham, December, 1921.

Lindsey County Council.—Lady

ASSISTANT MEDICAL OFFICER.—Applications are invited from registered Medical Practitioners for the position of Assistant Medical Officer for duties chiefly in connexion with Eye Clinics and Maternity and Child Welfare work.

Salary £550, rising annually by £25 to £700 per annum.

The successful applicant will be required to provide a car in order to enable her to carry out the work, but an allowance will be made to cover expenses.

Applications, on forms to be obtained from the undersigned, must be received not later than 4th January, 1922.

R. ASHLEIGH GLEGG, County Medical Officer of Health.
County Health Department, Corporation-street, Lincoln,
14th December, 1921.

Hertford County Hospital (64 beds). Wanted, a fully-qualified HOUSE SURGEON. Salary £200 per annum, with board, rooms, and laundry. Send age, qualifications, and three recent testimonials to the Secretary.

Free Eye Hospital, Southampton.—Wanted, HOUSE SURGEON, male or female. Must have some knowledge of eye work. Salary £150 per annum, with board, lodging, and laundry.
Apply, EDWARD C. REDMAN, Secretary.

The utmost care is exercised in recommending only LOCUM TENENS of UNIMPEACHABLE CHARACTER.—JOHN BELL & CROYDEN, Ltd., incorporating ARNOLD & SONS, Transfer Dept., 6, Giltspur-street, London, E.C.1

Locum Tenens Provided

at short notice.

Apply to Mr. PERCIVAL TURNER,

the oldest and only Agent who for forty years, *without agency fee to Principals*, has supplied Practitioners with reliable substitutes,

4 & 5, ADAM STREET, ADELPHI, STRAND, W.C. 2.

Telegrams: Epsomian, London. Telephone: Gerrard 399.

After 5 P.M.—Tel. Epsom 695.

Locum Tenens Provided

at an hour's Notice.

Apply to

Mr. W. S. ATKINS

(Late of Arnold & Sons, London),

43, Bedford-street, Strand, W.C. 2.

Telephone: Regent 229.

Telegraphic Address: "Positions, Westrand, London."

Doctor recommends Lady for daily post in London as Consulting-room ATTENDANT. Well-educated, capable, accustomed front door, telephone, care of instruments, &c. Book-keeping if desired.—Apply T., 54, Berkeley-avenue, Reading.

Typewriting. — MSS. copied with accuracy and despatch. Highest testimonials from doctors. Miss Evelyn Duncan, 58, Pall Mall, London, S.W. 1. Telephone, Regent 4238.

Required at once, General Practice in London or Suburbs. Can put down £350 and balance by instalments.—Write in confidence, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

Wanted, Practice or Partnership, with Panel. London preferred. Aged twenty-eight. About £1000 available.—Watson, 313, High Holborn, London, W.C. 1.

Required in London or Suburbs, General PRACTICE with Panel producing over £1000 per annum. Nice house at rental.—Send full details, in confidence, to Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

Required at once, Practices and PARTNERSHIPS.—Mr. W. S. Atkins (late of Arnold & Sons, London) has a large number of Clients who are seeking Practices and Partnerships, and wish to settle down immediately.—Send full particulars, in confidence, to Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, London, W.C. 2. 'Phone: Regent 229.

Urgent.—Partner wanted in good- class old-established non-dispensing Practice in first-class residential district within an hour of London. Share worth £1250 a year for sale at first for two years' purchase. Good house and garden available. A graduate preferred, married, and about thirty years of age.—Apply, by letter only, to 7083, care of Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

Wanted, Partner in old-established good-class and increasing Practice in Northern Town. No panel or contract work. Receipts last year £4000. One-fourth Share for sale. Must be well qualified, energetic, and should have held resident appointments at large general hospital. —Address, No. 711, THE LANCET Office, 423, Strand, W.C. 2.

To Purchasers. — Do not buy any Practice or Partnership without an investigation into books and other inquiries by an expert specially competent to conduct the same. Forty years' personal attention to such inquiries has given Mr. PERCIVAL TURNER an unique ability to advise in all cases. Terms and full particulars free on application to 4, Adam-street, Adelphi, Strand, W.C. 2. Telephone: 399 Gerrard. Telegram: Epsomian London.

John Bell & Croyden, Limited,
Incorporating
ARNOLD & SONS,
have a large number of Clients highly qualified, and with CAPITAL AT THEIR DISPOSAL, desiring to acquire PRACTICES OR PARTNERSHIPS.—Forward particulars to the General Manager, 6, Giltspur-street, London, E.C. 1.

For Disposal.—A really good Practice is not always to be had directly, but Mr. PERCIVAL TURNER (with forty years' personal experience) can generally offer applicants something suitable on being furnished with details of their requirements. Nearly all the best Practices are sold by him without being advertised.—Full information free of charge on application, personally or by letter, to 4, Adam-street, Adelphi, Strand, W.C. 2.

London.—Over £2000 a year.—Cash and Panel PRACTICE. No Midwifery. Good premises. Main road. Premium one and a half years' purchase.—Apply, No. 7072, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

London, S.W.—Now over £1000 a year. Good district. Easily worked. No panel. No midwifery. Premium £1400.—Apply, No. 7061, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

West of England.—£700 a year.— Old-established unopposed. Panel 500. Very little Midwifery. Great scope. Beautiful district; all sport. Rent £35. Premium one and a half years' purchase.—Apply, 7094, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

North-East Coast.—£1400 a year.— Old-established. Vendor retiring. No panel. Large Seaport Town. Easily worked. Fees 6s. upwards. Modern house in residential suburb. Premium £1800.—Apply, No. 7056, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

West of England.—£2400 a year.— Very old-established unopposed PRACTICE. Panel over 1000. Several appointments. Large detached House, garden, orchard, &c.; rent under £100. Residential district. All sport. Price only £3000.—Apply, 7092, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

To Lady Doctors, Nurses, &c.—For disposal, First-class old-established NURSING HOME near London. Receipts £4000 to £5000 a year, owner retiring. Good fees. Excellent premises fully equipped. Inclusive price about £5000, part down.—Apply, 7074, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

South Coast.—A General Practice situated at a favourite Seaside Resort producing over £1800 per annum. Panel list 1400. Fees up to 31s. 6d. Twelve-roomed house in central position. Electric light and gas. Premium £3000.—Quote Folio 503, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, W.C. 2.

Death Vacancy.—S.E. Coast.—Over £2500 a year. Old-established PRACTICE. Good appointments held. Locum in charge.—Apply, No. 7091, to Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2, who has personally visited and investigated books, &c.

Borneo.—Unopposed in important Town. Increasing income £500 to £600. Living cheap. No night work. No taxes. Plenty of English Society. Moderate terms.—Apply, 7062, Mr. Percival Turner, 4, Adam-street, Strand, W.C. 2.

London, N.—A Non-panel Practice situated in a good district producing over £1600. Fees 5s. upwards. Very good appointments held. No Midwifery. Ample scope for an energetic man. Excellent house in central position, containing five bedrooms, &c. Premium 14 years' purchase. Premium for house £2000.—Quote Folio 509, Mr. W. S. Atkins, Medical Transfer Agency, 43, Bedford-street, Strand, London, W.C. 2.

Ley Clark, House and Consulting Room Agent, 3A, Wimpole-street, W. A quarter of a century's experience with the medical specialist.
List of Houses, Consulting Rooms, and Nursing Home, free on application. Tel.: Langham 1095.

To be Let, Unfurnished, at £300 a year, in Portland Place, a Gentleman's HOUSE, for many years tenanted by a Doctor who has had the privilege of exhibiting his name plate.—Apply, Sole Agents, Samuel B. Clark & Son, 8, New Cavendish-street, Portland-place, W. 1.

Bed-Sitting Room in Doctor's House, close to Harley-street. Use of consulting and waiting rooms if desired.—Address, No. 212, THE LANCET Office, 423, Strand, W.C. 2.

ELLIOTT, SON & BOYTON

(J. BOYTON, P. H. WINTER, H. H. HOLT, & H. E. ALLPRESS)

6, VERE STREET, Cavendish Square, W.

AUCTIONEERS, ESTATE AGENTS, & SURVEYORS.

Messrs. ELLIOTT, SON & BOYTON are the best local Agents for HOUSES and CONSULTING ROOMS in the Harley, Wimpole, Queen Anne, & other streets off Cavendish & Portman Squares.

Established 76 years. *Telephone Nos. 2408 and 2409 Mayfair.*

Your Income Guaranteed up to age sixty-five during inability to follow your professional work through ANY kind of illness or accident, with the return in full of the whole of your outlay.

Apply for details, giving date of birth and weekly income required, to:—

Mr. W. S. ATKINS
(Late of Arnold & Sons, London),
43, Bedford-street, Strand, W.C. 2.
Telegrams: Positions, Westrand, London.
Telephone: Regent 229.

TO THE PROFESSION.

Medical Men requiring stylish Dress can secure perfectly tailored Clothes made to measure in 24 hours. Finest materials at most reasonable prices.
SUITS and OVERCOATS in great variety from £6 6s.
Patterns post free on application.
SPECIAL OFFER.—Black or Grey JACKET & VEST, for Professional or Evening Wear £4 14 6
A PERFECT FIT GUARANTEED.
Visitors to London can be measured and fitted same day.

HARRY HALL, 207, OXFORD STREET, W. 1.
149, CHEAPSIDE, E.C. 2.
'Phones—MUSEUM 820–821. CITY 2086.

AN IDEAL PROTECTION FOR MEDICAL MEN.

ALL ACCIDENTS
and
ALL ILLNESSES
from
ANY CAUSE
can now be insured, covering LARGE CAPITAL SUMS OR ANNUITIES in case of ACCIDENTAL DEATH, DISABLEMENT, LOSS OF LIMBS or EYES
and also
WEEKLY COMPENSATION during total or partial disablement by
ANY ACCIDENT
or ANY SICKNESS.

Write for details to Insurance Department JOHN BELL & CROYDEN, Ltd., incorporating Messrs. ARNOLD & SONS, Transfer Dept., 6, Giltspur-street, E.C. By effecting all your insurance through our House you pay the lowest premiums and secure quick and liberal settlement of claims without trouble or expense to yourself or your family.

BRASS NAME PLATES LIST No. 11A.
MEMORIAL TABLETS LIST No. 11.

F. OSBORNE, & Co. LTD., 27, Eastcastle St., Oxford St. London, W.

SUIT 50/- O'COAT 42/- LADY'S COSTUME 55/-

TURNED

and guaranteed "Just like New" by the Original and Leading Turn Clothes Tailors.

SEND ALONG AT ONCE. Carriage Paid One Way.
Thousands of Testimonials, many from Eminent men.

WALTER CURRALL & CO., 6, BROADWAY, LUDGATE HILL, LONDON, E.C.4.
Established 1903. Near "Times" Offices.
Phone: Central 1816. Please mention *The Lancet*.

THE MANCHESTER MEDICAL AND SCHOLASTIC ASSOCIATION. LTD.

The oldest MEDICAL Agency in Manchester, 8, KING STREET

Telegraphic Address: "STUDENT, MANCHESTER."

TRANSFERS and PARTNERSHIPS arranged and Investigations Valuations, &c., undertaken. ASSISTANTS and LOCUM TENENS SUPPLIED PRACTICES for Sale. Particulars on application.

THE SCHOLASTIC, CLERICAL, & MEDICAL ASSOCIATION, LIMITED

(Established in 1880 by Mr. G. B. Stocker.)

22, CRAVEN STREET, TRAFALGAR SQUARE, W.C. 2.

Telegraphic Address: "*TRIFORM, WESTRAND, LONDON.*" *Telephone No. 1854 (Gerrard).*

ASSISTANTS AND LOCUM TENENS SUPPLIED. RESIDENT PATIENTS INTRODUCED.

NO CHARGE TO PURCHASERS.

(1) DEATH VACANCY.—KENT COAST.—Very old-established PRACTICE, £3000, in small Town. Good appointments and Panel. Not much Midwifery. Very nice house with six bedrooms. Locum in charge.

(2) SOUTH-WEST ENGLAND.—Unopposed PRACTICE over £1600 in small Town, beautifully situated 600 feet above sea level. Panel 670. Very good house (seven bedrooms), with nice garden. Premium one and a half years' purchase. Cottage Hospital. Scope for one desiring Surgery.

(3) KENT.—Small, well-established and increasing PRACTICE, well over £300, in Industrial Town. Small Panel. Rent of house £42 10s. Premium £400.

(4) DEATH VACANCY.—SURREY.—Old-established PRACTICE about £1400–£1500 p.a. in good Residential District, under 15 miles from London. Very nice detached house (5-6 bedrooms), standing in its own grounds of over an acre. Rent £100 per annum.

(5) NORTH OF ENGLAND.—UNIVERSITY TOWN.—Special X-Ray PRACTICE worth about £1400 p.a. Hospital Appointments.

(6) HOME COUNTY.—Fourth PARTNER required in large good-class Practice. House in good position. Share worth about £1250 p.a. for sale. Premium two years' purchase. Preference for University Graduate and Surgeon.

(7) LANCASHIRE.—PRACTICE averaging £3500 p.a. in Manufacturing Town. Panel over 2000. Visits 3s. to £1 1s. Premium one year's purchase. Eminently suitable for two to buy together. Two houses available. Good Hospital.

(8) FAVOURITE HOME COUNTY.—PARTNERSHIP in good-class Practice in picturesquely situated Country Town. Panel 360. Well-built house (4/5 bedrooms) to be sold. Premium for Share worth about £1500 p.a. two years' purchase.

(9) SOUTH COAST.—FAVOURITE TOWN.—PARTNER required in good-class non-dispensing Practice of upwards of £3000. No panel. Practically no Midwifery. Premium One-third Share two years' purchase. Partner must be University Graduate with knowledge of, or prepared to take up, Eye work.

(10) SOUTH OF ENGLAND.—JUNIOR PARTNER required in Practice over £2400 in delightfully situated Market Town within ninety miles of London. Panel 970. Premium One-third Share two years' purchase.

(11) OPHTHALMIC PRACTICE.—PARTNERSHIP in good-class Special Practice, £2600 p.a., in Residential Town on South Coast. Premium One-third Share two years' purchase. Exceptionally good opening for well-qualified gentleman aged about thirty-five.

(12) HOME COUNTY.—PRACTICE about £2250 in very desirable Residential District within 20 miles of London. Panel about 600. Good house (six bedrooms, &c.) to be sold. Cottage Hospital. Premium one and a half years' purchase.

(13) LONDON, S.E.—PARTNERSHIP in good Middle-class Practice of £6500–£7000 p.a. in pleasant outlying Residential Suburb. No Panel. Good house with nice garden on lease. Premium One-fourth Share two years' purchase.

(14) LANCASHIRE.—MANUFACTURING TOWN.—Good Middle-class PRACTICE over £2000. Panel over 900. Substantially built semi-detached house. Premium £2000.

NUMEROUS OTHER PRACTICES AND PARTNERSHIPS NOT ADVERTISED. FULL DETAILS SENT FREE ON APPLICATION.

Medical Partnerships, Transfers & Assistantships (BARNARD & STOCKER) *Published by the Association. Price 13s. 9d.*

MR. A. V. STOREY, *General Manager.*

THE OLDEST MEDICAL AGENT.

Mr. PERCIVAL TURNER (Established over 40 years)

MEDICAL AGENCY,

4 & 5, Adam Street, Strand, W.C. 2.

Telegrams: "EPSOMIAN, LONDON." *Telephone:* GERRARD 399. After Office Hours—EPSOM 695.

PRINTED PROSPECTUS OF TERMS, ETC., POST FREE ON APPLICATION.

LOCUM TENENS provided—no charge to Principals.
Every description of AGENCY and ACCOUNTANCY work undertaken.

PARTNERSHIPS FOR DISPOSAL.

No. 7044. CORNWALL COAST.—£1200 a year. Favourite Resort. Old-established. Share 5/12. Great scope.

No. 7040. NORTH COUNTY.—£4000 a year. Old-established. Increasing. Non-panel. 1/4 Share at first.

PRACTICES FOR DISPOSAL.

No. 7060. ESSEX SUBURB.—£1800 a year. Old-established. Panel 700. Small house and garden. R.C. would suit best.

,, 7056. NORTH-EAST COAST.—£1400 a year. Large Town. No panel. Great scope. Modern house.

*No. 7046. ESSEX.—£1000 a year. Good Suburban Practice. Easily worked. Small house. Premium £1500.

,, 7030. EAST COUNTY.—£1400 a year. Unopposed. On rail. Panel 600. Easily worked.

NOTE.—*Practices marked with an asterisk have been personally investigated or visited by Mr. Turner.*

Full details of any of the above and of many others for disposal not advertised will be sent free on application to Mr. PERCIVAL TURNER as above

THE DIRECTORS OF JOHN BELL & CROYDEN LIMITED

INCORPORATING

ARNOLD & SONS

fully realise the importance of the Company's **MEDICAL TRANSFER DEPARTMENT**, and with a view of rendering to the Profession a service of the utmost efficiency the Department has now been placed under the direct control of the Company's GENERAL MANAGER, whose experience of over 40 years in the City, will in future place at the disposal of the Profession generally a **MEDICAL TRANSFER DEPARTMENT**, the basis of which will be

EFFICIENCY —— RELIABILITY —— INTEGRITY and COURTESY

in all matters pertaining to

PURCHASE and SALE OF PRACTICES and in the SELECTION OF LOCUM TENENS.

Please address your communications to—

THE GENERAL MANAGER, JOHN BELL & CROYDEN, LIMITED, 6, GILTSPUR STREET, E.C.
Telegraphic Address: "Instruments, London." Telephone No.: City 5210.

DIRECTORS.

Sir Sidney R. Alexander, M.D., J.P.
John D. Marshall, M.P.S.
Clement A. P. Langham.
James E. Arnold.
Charles V. Faviell.
William L. Langham.
John R. Wretts, Ph.C.

MEDICAL CONVEYANCING AGENCY

(EST. 1860.)

31, BEDFORD STREET, STRAND, W.C. 2.

'Phone: Gerrard 3873.

MR. HERBERT NEEDES with 35 years' experience personally negotiates the Sale of Practices and Partnerships, undertakes Valuations and Audits and provides Locums and Assistants.

DR J. FIELD HALL

(FIELDHALL, LIMITED),

MEDICAL TRANSFER AGENT,

28, CRAVEN STREET, STRAND, W.C. 2.

Telephones: GERRARD 4667, ,, 2099

Telegrams: "FIELDHALL, WESTRAND-LONDON."

ALL BRANCHES of AGENCY WORK undertaken.

Purchasers stating their requirements in full will be sent particulars of suitable PRACTICES and PARTNERSHIPS for Sale free of charge.

PEACOCK & HADLEY (EST. 1868)

(Mr. A. HADLEY),

MEDICAL TRANSFER AGENCY,

19, Craven Street, Strand, W.C. 2.

Wires: HERBARIA WESTRAND—LONDON. *Phone:* CENTRAL 1112

Mr. J. C. NEEDES

MEDICAL PARTNERSHIP AND CONVEYANCING AGENCY,

8, DUKE STREET, ADELPHI, W.C. 2.

(Late 1, ADAM STREET, ADELPHI.)

Telegrams: Acquirement, Westrand, London. Phone: Gerrard, 3543

This Agency (which has been established since 1875) undertakes the Sale of Practices, the Introduction of Partners, Valuations, Investigations on behalf of Purchasers, the supply of trustworthy Locum Tenens and Assistants, and every other description of Medical Agency Business. N.B.—No charge made to Purchasers.

BLUNDELL & CO.,

Walter House, 418-422, STRAND, W.C. 2.

(Entrance Bedford Street.) *Telephone:* 7148 GERRARD.

Cable Address: (via Eastern) "REGALLABLE, LONDON."

LOCUMS SUPPLIED.

West End. — Electro-Therapeutic PRACTICE of £550, with unlimited scope. Practice has been let down, but could very soon be doubled. Good house, long lease; rent covered by sub-letting.

Easy terms. — Partnership with Succession. Half Share of £2400 in Mining District near the sea. Premium £1400 on easy terms.

South-west County.—Old-established PRACTICE in Country Town with Cottage Hospital in beautiful district. Practice doing over £1000. Panel 800. Appointments £70. House with very nice garden; rent £45.

London, N.E.—Very old-established PRACTICE of over £1500. Appointments £220. Panel 1000. Could be increased. Long lease. Rent £75. Premium £2000.

Scotland. — Unopposed Practice of £1500, of which £900 is from panel and appointments. Good house can be bought for £1000.

Home County.—Middle- and Working-class PRACTICE of £1050 increasing, in nice Town with Cottage Hospital up the river. Panel 750. Rent £44.

S.W. London.—Partnership.—Third Share worth about £600, with half any increase. Good house and garden. Can be rented.

Surrey.—Third Share of £2200 in delightful residential district. Half Share later. Surgeon could have hospital appointment.

N.E. London. — Cash and Panel PRACTICE of over £3000. Panel 1400. Convenient residence.

Purchasers stating their requirements can have Particulars of other Practices not advertised.

LEE & MARTIN, Ltd.

MEDICAL AGENTS

(ESTABLISHED 1877)

71, TEMPLE ROW, BIRMINGHAM.

Telegrams: "LOCUM, BIRMINGHAM." Telephone: 1116 CENTRAL

TRANSFERS OF PRACTICES AND PARTNERSHIPS ARRANGED ACCOUNTS AUDITED & INCOME-TAX RETURNS PREPARED.

"LOCUMS" AND ASSISTANTS SUPPLIED

ZYMOTIC DISEASES.

HOGG'S IMPROVED STEAM VAPORISERS

The most simple and Effectual Apparatus for the Diffusion of Antiseptics. (REGD.) Price 2/6, post free 2/9.

R. HOGG & SON, 1, Southwick Street, Hyde Park, W.

The GREATEST and RICHEST of all pipe smoking tobaccos is CRAVEN, for nearly sixty years the choice of cultivated and travelled Britons throughout the world.

Sold in Ordinary and Broad Cut.

2oz. 2/5 4oz. 4/10

Also obtainable in cartridge form at same price.

Carreras, Ltd. London. Est. 1788

Craven MIXTURE *Get a Tin To-day.*

THE LANCET

SUBSCRIPTIONS.

THE LANCET is published on Friday morning each week, price 1s. The postage, inland, is one penny for the first six ounces and one halfpenny for the next six ounces; abroad one halfpenny for each two ounces.

The rates of subscriptions are as follows:—

Inland.			
One Year	£2	2	0
Six Months	1	1	0
Three Months	0	10	6
The Colonies and Abroad.			
One Year	2	10	0
Six Months	1	5	0
Three Months	0	12	6

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County Westminster and Parr's Bank, Covent Garden Branch") should be made payable to the Manager, THE LANCET Offices, 423, Strand, London, W.C. 2.

ADVERTISING.

Books and Publications . .	Four Lines and under £0 6 0
Official and General Announcements	
Trade and Miscellaneous Advertisements . .	Every additional Line 0 1 6

Quarter Page, £3. Half a Page, £6. An Entire Page, £12

Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Tuesday, accompanied by a remittance.

Answers are now received at this Office, by special arrangement, to Advertisements appearing in THE LANCET.

Office: 423, Strand, London, W.C. 2; and 1 & 2, Bedford-street, adjoining.

"Semprolin" (*Trade Mark.*) **Emulsion**

Contains sixty per cent. of the PUREST LIQUID PARAFFIN of highest viscosity perfectly emulsified.

Supplied as simple emulsion or combined with Salol, Guaiacol, Phenolphthalein, etc.

IN Liquid Paraffin Therapy, "SEMPROLIN" Emulsion is preferable to plain oil because it mingles more thoroughly and easily with the stomach contents, obviating nausea and softening the fæces effectively; it is far more palatable and is therefore taken regularly by patients, and other medicaments can be prescribed with it in the same dose.

In 8 oz. and 16 oz. Bottles.

Samples Free to Medical Men.

THE Wm. BROWNING CO. LTD.,

ALBERT STREET, PARK STREET, LONDON, N.W.2.

PRINTED by HAZELL WATSON & VINEY LD., 52, Long Acre, W.C. 2, and PUBLISHED by the PROPRIETORS, WAKLEY AND SON (1912), LTD. at No. 423, Strand, and Nos. 1 and 2, Bedford Street, Strand, in the County of London.—Saturday, Dec. 31, 1921.

SPECIALLY INTRODUCED AT THE REQUEST OF THE MEDICAL FACULTY.

Fry's MALTED Cocoa

CONSTANTLY RECOMMENDED BY THE MEDICAL PROFESSION AND PRESS.

CATALOGUE of SECONDHAND SURGICAL INSTRUMENTS, OSTEOLOGY, MICROSCOPES, POST FREE.

Students' Half Sets of Osteology. Articulated Skeletons and Disarticulated Skulls.

Secondhand Surgical Instruments, Osteology and Microscopes bought, sold and exchanged.

MILLIKIN & LAWLEY, 165, STRAND. LONDON, W.C. 2. Telephone City 1706.

TESTOGAN — THELYGAN

For Men — **For Women**

Formula of Dr. Iwan Bloch.

After seven years' clinical experience these products stand as proven specifics.

INDICATED IN

IMPOTENCE AND INSUFFICIENCY OF THE HORMONES

They contain the hormones of the reproductive glands and of the glands of internal secretion.

Special Indications for Testogan:

Sexual Infantilism and Eunuchoidism in the male. Impotence and sexual weakness. Climacterium virile. Neurasthenia, hypochondria.

Special Indications for Thelygan:

Infantile sterility. Underdeveloped mammæ, &c. Frigidity. Sexual disturbances in obesity and other metabolic disorders. Climacteric symptoms, amenorrhœa, neurasthenia, hypochondria, dysmenorrhœa.

DIRECTIONS: A tablet three times daily after meals. Also in ampules for intragluteal injection.

Extensive literature and case reports on request to the

CAVENDISH CHEMICAL CORPORATION,
Empire House, 175, Piccadilly, LONDON, W. 1.

BUTLER & CRISPE, 82, Clerkenwell Road, London, E.C. 1, Eng.
English Distributors.

Glaxo is not a synthetic food

Glaxo is not a synthetic food; it is simply the solids of milk, with a standardised content of butter-fat and lactose, and rendered of remarkable bacterial purity by the Glaxo Process of desiccation.

Glaxo is a valuable galactagogue. The importance of Glaxo in the dietary of expectant and nursing mothers as a means of promoting breast-feeding cannot be too strongly emphasized. This is because Glaxo, when reconstituted, gives pure milk in a safe and unadulterated form and of an easy digestibility, as the casein undergoes a physical alteration which prevents the formation of a dense clot.

In Glaxo the accessory food factors are not destroyed. The anti-rachitic vitamin in Glaxo is high because the cows are pasture-fed all the year round, and it is not impaired in the process of drying. The anti-neuritic vitamin is also unimpaired. The anti-scorbutic vitamin, it is contended, is unaffected by the Glaxo Process, although sterilisation, boiling and other methods effectively destroy it.

Glaxo is not a synthetic food, but simply a pure, clean, and safe form of milk, and as such, has every claim to your careful investigation. Samples and literature, in substantiation of these claims, on application.

Glaxo Full-Cream		Glaxo Three-Quarter-Cream		Glaxo Half-Cream *	
Fats	26·00	Fats	20·00	Fats	14·00
Proteids	22·90	Proteids	26·90	Proteids	29·80
Lactose	42·30	Carbo-hydrates	44·00	Carbo-hydrates	46·50
Mineral Matter	5·60	(Lactose 34·3 Cane Sugar 9·7)		(Lactose 36·9 Cane Sugar 9·6)	
Moisture	3·20	Mineral Matter	5·90	Mineral Matter	6·50
		Moisture	3·20	Moisture	3·20
	100·00		100·00		100·00

* Glaxo Half-Cream has been prepared by direction of the Medical Profession for weak, ailing, and premature babies.

Glaxo

The Super-Milk

GLAXO (Medical Dept.), 56, OSNABURGH STREET, LONDON, N.W. 1.

Proprietors: Joseph Nathan & Co., Limited, London & New Zealand.

JAN 8 1924